

COMPUTER AND FINANCIAL SERVICES OPPORTUNITIES
IN THE HEALTH CARE INDUSTRY

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COMPUTER AND FINANCIAL SERVICES OPPORTUNITIES IN THE HEALTH CARE INDUSTRY

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I INTRODUCTION

- This report was prepared by INPUT for Citibank, N.A., and covers computer and financial services opportunities in the health care industry.
- The industry that is the focus of this study is the Medical Practitioner, Dental Practitioner, and Hospitals. In particular it is SIC-801, Office of Physicians; SIC-802, Office of Dentists; and SIC-806, Hospitals.
- Interviews were conducted with the following three groups:
 - Physicians and Dentists.
 - Hospitals - Executives and Financial.
 - Hospitals - Data Processing Director.

Copies of the questionnaires used are in Appendix C.

- The number of interviews conducted were:
 - One hundred and fifty telephone interviews with offices of physicians and dentists.
 - Seventy-six hospitals were interviewed (52 telephone, 24 on-site).

- The interviews were evenly distributed between the states of New York, Illinois, Florida, Texas, California, and other.
 - Details of the interview sample are shown in Appendix A.
- Interviews were conducted in the month of July, 1979.
- A midpoint review was held with Citibank N.A. at INPUT on August 23 and 24, 1979.
- Respondents were generally cooperative and were interested in receiving the executive summary of the research results which was promised early in the interview.
- Respondents were advised that they would not be identified by name in any published report.
- Forecasts found in this report (AAGR) are based on current U.S. dollars, and include an allowance of 6% for inflation.
- All ratings found in this report are on a scale of 1-5, with 5 being high or best.
- Definitions of the terms used throughout this report can be found in Appendix E.

II EXECUTIVE SUMMARY

A. COMPUTER AND FINANCIAL SERVICES MARKET FOR PHYSICIANS AND DENTAL GROUPS AND HOSPITALS

I. MARKET STRUCTURE

a. Physicians And Dental Groups

- A total of 214,710 physicians in the United States practice in 121,171 establishments and 111,178 dentists practice in 76,694 establishments. These are all non-federal government, office based.
- Of the total population, this study was focused on physicians and dentists practicing in groups. These groups are either three or more practicing together (group practice) or solo professionals whose practices are located in a common facility (solo co-located). A summary is shown below:

| | <u>No. Of MDs or DDS</u> | <u>Total Annual Revenue</u> |
|-------------------------|------------------------------|---------------------------------|
| <u>Group Practice:</u> | | |
| MDs | 75,694 | \$8.3 billion |
| DDS | 13,255 | 1.2 |
| <u>Solo Co-Located:</u> | | |
| MDs | 69,508 | \$7.6 billion |
| DDS | 48,961 | 5.7 |

- The market segment of physicians in group practice is particularly attractive. Thirty-five percent of the total physician population can be reached in 8% of total establishments. Dental group practices are not as well developed, but are growing at a rate of 10% per year.
- The number of physicians and dentists grows at a rate of about 2% per year and is not an important factor in growth in the market. However, the degree of market penetration of EDP is estimated to be 10% and the market is expanding at the rate of 24% per year, 1.5 times the average growth rate of the total information processing industry.

b. Hospitals

- Approximately 6,000 non-federal, short term general hospitals in the United States provide just under one million beds.
- Total annual expenses for the group are over \$45 billion.
- Total health care costs in the United States are rising at an annual rate of 13% and are now estimated to be 9% of total G.N.P.
- The number of hospitals is not growing, but market growth for computer equipment and services will come from expanded market penetration. INPUT estimates the current market penetration to be 30% and annual growth rate to be around 16% per year, which is equal to the AAGR for total computer services.

2. PRESENT MARKET AND MARKET FORECAST

- Present and future markets for computer and financial services for all groups and hospitals are shown in Exhibit II-1.

EXHIBIT II-1

PRESENT MARKET AND MARKET FORECAST
 COMPUTER AND FINANCIAL SERVICES
 PHYSICIANS AND DENTAL GROUPS
 AND HOSPITALS

| TYPE OF USER | USING COMPUTERS NOW | USING COMPUTERS IN TWO YEARS | PRESENT USERS PLANNING TO EXPAND | EXPENDITURES FOR COMPUTER EQUIPMENT AND SERVICES | | POTENTIAL MARKET FOR MEDICARD SYSTEMS | |
|--------------------------------|---------------------------|---------------------------------------|--|--|--------------------|---|--------------------|
| | | | | 1979 \$ MILLION | 1984 \$ MILLION | 1979 \$ BILLION | 1984 \$ BILLION |
| PHYSICIAN AND DENTAL GROUPS | 34% | 45% | 13% | \$ 29 | \$ 85 | \$.6 | \$ 1.2 |
| HOSPITALS | 93 | 98 | 85 | 313 | 619 | 2.3 | 4.2 |
| TOTAL INDUSTRY | - | - | | \$ 342 | \$ 704 | \$ 2.9 | \$ 5.6 |

- Thirty-four percent of all physician and dental groups are presently using computers and the number is expected to reach 45% in the next two years.
- Use of computers by hospitals is universal with only some of the small hospitals not automated. Ninety-three percent of all hospitals are using computers and the number is expected to reach 98% in the next two years. Eighty-five percent of present users expect to expand their computer usage.
- The first and most frequent functions automated are patient billing and accounts receivable. Among the physician and dental groups over 80% have automated these functions and among hospitals, 98% have. However, all financial services are a small part of the potential market with patient management, medical, and professional services markets expected to be several times as large in the next five years.
- The level of satisfaction with their computer systems and services is relatively high among all users. Respondents were asked to express their level of satisfaction by rating their systems or services on a scale of 1-5. The number of ratings in the 4 and 5 categories are as follows:

No. Of 4 and 5 Ratings

| | |
|------------------------------|-----|
| Physicians and Dental Groups | 85% |
| Hospitals: | |
| In-house systems | 68 |
| Remote services | 59 |

The lowest degree of satisfaction is among hospital users of remote computing services.

- There are no established or dominant vendors of computer equipment and services in the physician and dental group market.

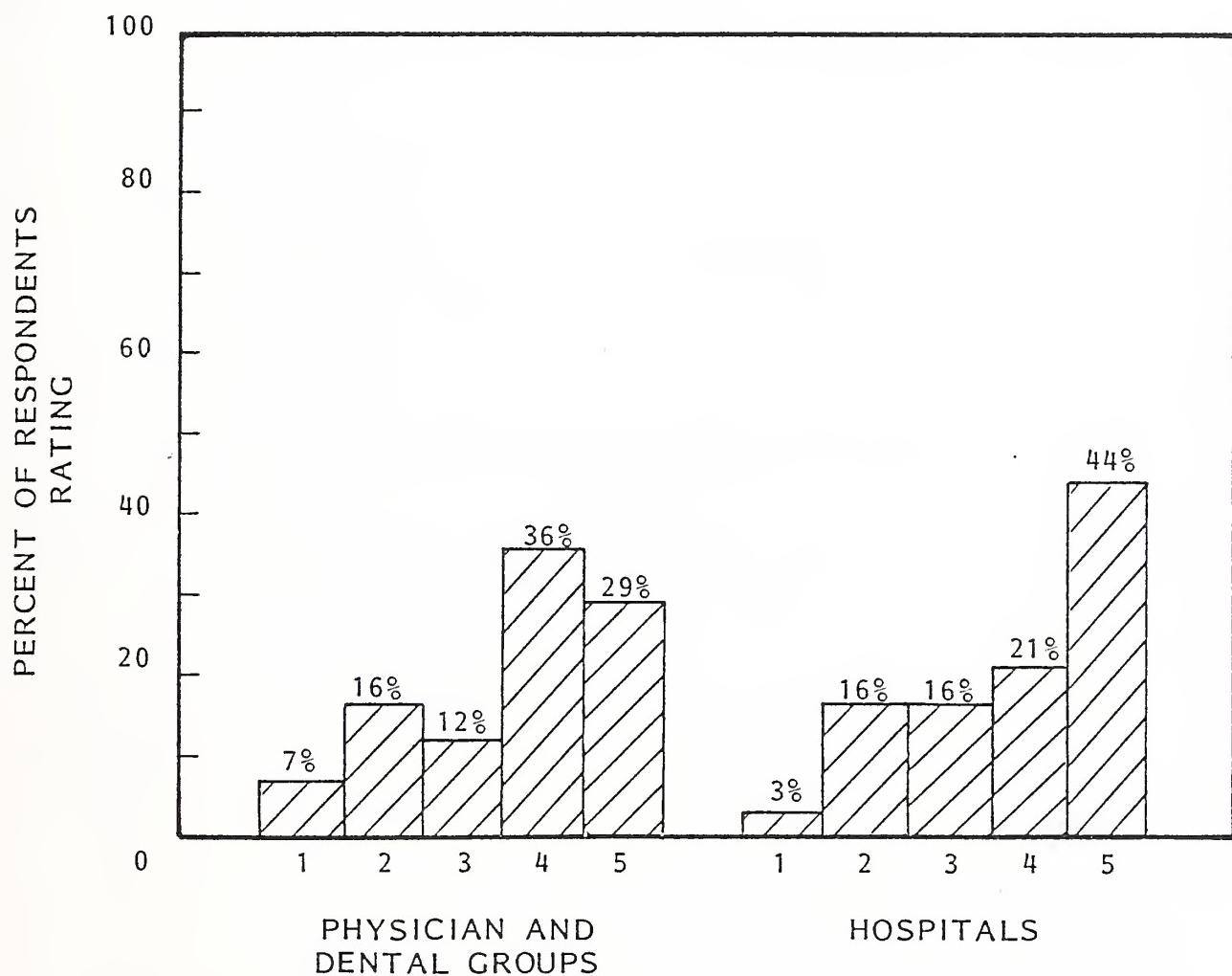
- In the hospital market for computer equipment, IBM, Four Phase, DEC, Burroughs, and Honeywell are the dominant vendors, with IBM well ahead of the rest. In the hospital market for remote computing services SMS and McAuto are clearly the leaders.
 - Current annual expenditures for computer equipment and services by the total industry are \$342 million and are expected to reach \$704 million in five years.
 - The potential market for the medicard system for the total industry at 3% of collections, is \$2.9 billion in 1979 and is expected to grow to \$5.6 billion in 1984. These figures relate to billing and collection only. They do not include other computer services or other financial services.
 - Physician and dental groups and hospitals all have a difficult time collecting outstanding receivables, which have a very negative effect on cash flow.
 - Total outstanding receivables over 60 days for medium and large size hospitals alone is currently estimated to be \$6.2 billion. If the medicard system is effective in making large improvements in timely collection, the positive financial effects on cash flow are very large and the system would be cost effective.
- Fifty-two percent of all physicians and dental groups are using financial services now. The largest percentage of use is by physicians group practices where 66% are using financial services. The predominant use is for equipment leasing and is attributable primarily to leasing of photocopy equipment.
 - Eighty-eight percent of all hospitals are using financial services now. All of the large hospitals of over 500 beds interviewed are using financial services. The largest percentage use was co-op buying (70%).

3. ASSESSMENT OF MEDICARD CONCEPT

- Every effort was made to insure an accurate and in-depth rating of the proposed medical credit card system (Medicard). First, an overall rating of the card was made, and then each individual feature was rated. Ratings are on a scale of 1 to 5, with 5 being high. Results of the ratings for physician and dental groups and hospitals are shown in Exhibit II-2. The response was most positive and reconciles with the impressions obtained in the on-site interviews. In many instances the responses were even enthusiastic. Sixty-five percent of all ratings were either 4 or 5.
- The proposed system is regarded by most to be extremely ambitious, and properly so. This leads to widespread skepticism about the vendor's ability to successfully implement the system and keep it current with the myriad of required changes of information.
- There is concern over losing control over patient billing and collection, the financial backbone of the user. If they give it up to an outside organization, and it fails, they are in severe financial difficulty.
- It will be difficult at best to sell the service without demonstrating its successful use by a sample community. Nobody wants to be first in such a revolutionary change.
- The overwhelming attraction of the proposed system is the great financial advantage associated with advancing the cash flow. Internal cost savings are attractive as well but are smaller in magnitude.
- Eliminating the problems involving third party payers and governmental regulation is very attractive.
- To sum up, the proposed card system concept is highly regarded by a majority of potential users and the market for the services is real and unpenetrated.

EXHIBIT II-2

OVERALL RATING OF PROPOSED
MEDICAL CREDIT CARD SYSTEM



4. INDUSTRY ISSUES

- Typical remarks by respondents concerning basic industry problems and issues are shown in Exhibit II-3 and II-4.
- The overriding concern among physician and dental groups is with the difficulties of the billing and collection process.
- The overriding concern among hospitals is imposed governmental regulations.

B. STRATEGIC ISSUES

1. PREMISE

- The medicard system can become a major force in the computer and financial services market in the health care industry.
- All collections, except cash or other charge cards, will be made by the medicard system, avoiding the problem of running dual systems.
- The fundamental economic reasons for installing the system, from the point of view of the client, are improved cash flow coming primarily from earlier collections and from labor displacement.

2. IMPLEMENTATION

- a. Acquisition Of A Computer Services Vendor Serving The Health Care Industry
- This type of acquisition would provide a position in the market, help establish credibility, and provide developmental capability.

EXHIBIT II-3

TYPICAL REMARKS BY RESPONDENTS
CONCERNING BASIC PROBLEMS AND ISSUES
(PHYSICIAN AND DENTAL GROUPS)

- "TRYING TO STAY EVEN IN BILLING INSURANCE COMPANIES!"
- "NEED TO HAVE PATIENTS' FINANCIAL RECORDS FOLLOW HIM LIKE CREDIT RATING!"
- "SHARED COMPUTER SERVICES ARE NOT FLEXIBLE ENOUGH TO MEET ALL NEEDS!"
- "A WAY TO AUTOMATE PATIENT CHARTS EFFICIENTLY."
- "LACK OF UNIFORMITY TO THE FORMS OF THE VARIOUS PRIVATE INSURANCE COMPANIES!"
- "PROFESSION IS VIEWED AS A LENDING INSTITUTION - PROVIDING LONG TERM LOANS TO PATIENTS!"
- "PAPER VOLUME!"
- "IT IS GETTING WORSE PEOPLE PAY LATER AFTER MORE BILLING!"

EXHIBIT II-4

TYPICAL REMARKS BY RESPONDENTS
CONCERNING BASIC PROBLEMS AND ISSUES
(HOSPITALS)

- "OPERATIONAL COSTS - WE HAVE TO EDUCATE THE PUBLIC THAT IF THEY WANT THE BEST MEDICAL CARE, THEY WILL HAVE TO PAY FOR IT."
- "STATE AND FEDERAL REGULATIONS ARE INCREASINGLY RESTRICTING MANAGEMENT'S PEROGATIVES."
- "MEDICARE/MEDICAID REIMBURSEMENT RESTRICTIONS."
- "OCCUPANCY IS THE PROBLEM."
- "COST CONTAINMENT."
- "WANT AN ON-LINE, UP TO DATE, MANAGEMENT INFORMATION SYSTEM."
- "IT ALL COMES DOWN TO CASH FLOW."
- "GOVERNMENT REGULATION DOES NOT BELONG IN THIS INDUSTRY."
- "OVER UTILIZATION OF SERVICES."
- "GOVERNMENT AND THIRD PARTY REQUIREMENTS FOR PAPERWORK ARE BURYING US."

- However, the acquired customer base would be geographically disbursed, rather than regionally clustered, as needed for the introduction of a successful card system. It would be questionable whether the acquired vendor would have the total capability to design and develop a system of the magnitude of medicard.

b. System Development

- Whether or not an acquisition is accomplished, the development effort for the medicard computer system is very large due to the volume of information to be captured and processed and the multiple interfaces to be established and maintained among health care providers, third party payers, employers, and patients. Once the initial system is complete, there is a substantial continuing effort required to keep the information current and to make ongoing changes to the system as governmental and other requirements change.
 - The magnitude (dollars and time) of the initial and ongoing system development should be estimated and provisions made to accomplish it.
 - The use of an outside software development contractor to supplement internal capability would appear to be attractive. It would reduce start-up time and eliminate the need to expand existing in-house staff in a very tight personnel market. However, outside support should be limited to the development of carefully specified segments of the system.
 - One major decision in the system design is whether the system would be limited to the financial applications only, or will include the areas of patient management, medical applications, and professional services. This decision will effect both the type of acquisition and the size of the development effort.
 - Restricting the computer system to financial services (medicard) would greatly reduce the development effort and emphasize the largest

market area. However, the system would have to interface with other medically oriented systems.

- Expanding the computer system to include these advanced applications would emphasize the largest part of the computer services market while also providing for entry into the financial services market. However, this would increase the size of the development effort and might delay the introduction of the medicard system. A careful examination should be made to determine if these applications could be acquired rather than developed.
- Potential users expressed a significant concern about "losing control over receivables." Once collections are completely turned over to an outside vendor, such as a medicard system, the economic life of the group is fully dependent on the vendor. The system design must satisfy this major concern in order to make the system attractive to users.

c. Revolutionary Versus Evolutionary Approach

- The computer services market in the health care industry has been an evolutionary series of advancements in automation of functions. However, inherent in the medicard concept is a very large change to basic financial functions (billing and collections) which have to be made over a relatively short time span.
 - This aspect which potentially can produce a major improvement in cash flow and minimize the problems of dealing with all of the parties involved is what make the system so attractive to users.
 - On the other hand, the changes are "revolutionary" and, if there were substantial unsolved problems, the effect could be disastrous. The question of credibility is a large issue which must be addressed.

- Modeling the medicard system in a chosen community and proving its worth would be a powerful, but ambitious, answer to the credibility question. Once established the concept could be sold regionally to achieve large market penetration.

3. POTENTIAL IMPACT

a. Impact On The Health Care Industry

- The medicard system has the potential for making a significant financial impact on the health care industry.
 - If really significant improvements are made in cost savings and improved cash flow for the initial groups or hospitals involved, there would be considerable motivation and pressures involved for others to adopt the same methods.

b. Impact On Computer Equipment And Services Vendors

- Success of the medicard system would force existing computer equipment and service vendors to respond by making major changes in order to compete over the long run.
 - The medicard system conceptually could have sufficient impact to force a major restructuring of the efforts of present vendors.
 - It would also provide a possible "franchise" market for the medicard system. This would provide an additional source of revenue and would help force uniformity on all vendors to the health care industry.

III COMPUTER AND FINANCIAL SERVICES MARKETS IN PHYSICIAN AND DENTAL GROUPS

A. INDUSTRY STRUCTURE

I. FUNCTIONAL DESCRIPTION

- The industry which is the focus of this part of the study is the Medical Practitioner and Dental Practitioner. In particular it is SIC-801, Offices of Physicians, and SIC-802, Offices of Dentists.
- In 1976 (the latest year for which there are published data) there were 214,710 physicians practicing in 121,171 establishments and 111,178 dentists practicing in 76,359 establishments. These are all non-federal government, office based.
- The number of physicians and dentists practicing in groups of three or more, hereafter referred to as group practice, are:
 - Physicians: 75,694 (35% of total) in 10,167 (8% of total) establishments average seven MDs per group.
 - Dentists: 13,255 (12% of total) in 2,459 (3% of total) establishments average 5 DDS per group.

- The market segment of physicians in group practice using computer automation is particularly attractive. Thirty-five percent of the total physician population can be reached in 8% of total establishments, and have a total of \$8.3 billion in annual revenues. This market segment is the subject of a related INPUT report referenced in Appendix D.
- Group practice among dentists is not as well developed as it is among physicians. Only 12% of dentists are in group practice with total annual revenues of \$1.2 billion, but the number in groups is growing at the compound rate of 10% per year. This segment has doubled since 1972.
- The average annual gross revenue per professional is:

| | | |
|------------|---|-----------|
| Physicians | = | \$110,000 |
| Dentists | = | \$91,000 |

- The interview sample was further broken down in the following manner:
 - MD GROUP-SMALL (3-6 MDs)
 - MD GROUP-MEDIUM (7-19 MDs)
 - MD GROUP-LARGE (20+ MDs)
 - MD GROUP PRACTICES: Total of all physician groups practicing in groups of three or more.
 - SOLO CO-LOCATED MDs: Physicians in solo practice whose practices are located together in a common facility, such as a medical office building. INPUT estimates this group to be 50% of all physicians not in group practice, or 69,508 physicians with annual revenues of \$7.6 billion.

- DENTAL GROUPS: Comprised of both dentists in group practice and dentists in solo practice, co-located in a common office building. Eighty percent of the sample were group practices and 20% were solo co-located. INPUT estimates the solo co-located groups to be 50% of all dentists not in group practice or 48,961 dentists with annual revenues of \$4.5 billion. All market projections for dentists include the total of both group practices and solo co-located, or 66,216 dentists with annual revenues of \$5.7 billion.
- Of those interviewed, 80% held the position of administrator, office manager, or financial manager and 20% were either physicians or medical secretaries.
- Over 90% of all physician groups are located in medical office buildings or hospital affiliated buildings. The majority (56%) of dental groups are located in commercial office buildings with 40% located in medical office buildings. Location of practices are shown in Exhibit III-1.
- The type of facility ownership is shown in Exhibit III-2.
- Sixty-eight percent of physician group practices were specialized as opposed to general practice. For solo co-located MDs, 78% were specialized practices. For dental groups, the mix is reversed with 62% of the groups in general practice.
- The average number of patients seen per day per MD are:
 - MD Group Practice 10
 - Solo Co-Located MDs 20
 - Dental Groups 15
- For further information see Appendix B: Market Forecast Data.

EXHIBIT III-1

LOCATION OF PRACTICES
(GROUPS)

| TYPE OF PRACTICE | MEDICAL OFFICE BUILDING (PERCENT) | HOSPITAL AFFILIATED BUILDING (PERCENT) | HOSPITAL (PERCENT) | OFFICE BUILDING (PERCENT) |
|---------------------|-----------------------------------|--|--------------------|---------------------------|
| MD GROUP PRACTICES | 76% | 12% | 4% | 8% |
| SOLO CO-LOCATED MDs | 86 | 7 | 1 | 6 |
| DENTAL GROUPS | 40 | 2 | 2 | 56 |
| TOTAL ALL GROUPS | 65% | 6% | 8% | 21% |

NUMBER OF RESPONDENTS = 149(99%)

EXHIBIT III-2

OWNERSHIP OF FACILITIES
(GROUPS)

| TYPE OF PRACTICE | OWNED (PERCENT) | RENTED (PERCENT) | LEASED (PERCENT) |
|---------------------|-----------------|------------------|------------------|
| MD GROUP PRACTICES | 31% | 27% | 42% |
| SOLO CO-LOCATED MDs | 10 | 49 | 41 |
| DENTAL GROUPS | 34 % | 24% | 42% |

NUMBER OF RESPONDENTS = 144 (96%)

2. GROWTH HISTORY AND FORECAST

- Over the six year period from 1970 to 1976, the number of office based private physicians and dentists grew 14%; a 2.2% per year average rate. This slow growth is expected to continue and will not be an important factor in expansion of the market.
- The number of physician group practices with three or more MDs follows the same slow trend. However, as previously reported, dental group practices are growing at a rate of 10% per year, enhancing the attractiveness of this market segment.
- The growth in use of automation by medical and dental groups will come from expanded market penetration instead of industry growth. INPUT estimates that the growth in computer equipment and services will be about 24% per year. Market penetration is small (INPUT estimates 10%), however, physician and dental groups have a great interest in data processing. This industry is expected to experience about 1.5 times the average growth rate of the total information processing industry.

B. USE OF COMPUTER EQUIPMENT AND SERVICES

I. DEGREE OF COMPUTER AUTOMATION

a. Present Use Of Computer Automation

- Physician and dental groups have considerable involvement in, and awareness of, computer equipment and services, but present applications are limited almost entirely to business office functions.
- Thirty-four percent of physicians and dental groups interviewed are presently using computer equipment and services, as shown in Exhibit III-3.

EXHIBIT III-3

PRESENT USERS OF
COMPUTER EQUIPMENT AND SERVICES
(GROUPS)

| TYPE OF PRACTICE | SITE - PERCENT OF USERS USING COMPUTERS NOW (PERCENT) | | USING HOSPITAL D.P. (PERCENT) |
|----------------------------|---|---------------------|--|
| | IN-HOUSE (PERCENT) | REMOTE (PERCENT) | |
| MD GROUP PRACTICES | 50% | 28% | 3% |
| SOLO CO- LOCATED MDs | 18% | 11 | 89 |
| DENTAL GROUPS | 34% | 13 | 81 |
| TOTAL ALL GROUPS | 34% | 20% | 76% |
| NUMBER OF RESPONDENTS | 150 (100%) | 54 (36%) | 49 (32%) |

- Fifty percent of MD group practices interviewed are using computers. This result of this study confirms a previous finding in a related INPUT report (Appendix D).
- There are notable differences in the use of computers depending on the size and nature of groups. For MD group practices only 30% of the small groups were involved, compared to 80% of medium and large groups. This is because large groups found the burden of manual processing of large volumes of paperwork too costly. They were forced to use data processing early. The small groups could handle the volume manually, so they are moving into automation later.
- Solo co-located MDs (18%) and dental groups (34%) are less involved with computers, but are moving in that direction
- All of the groups are much more involved with remote computing services (76%) than they are with in-house systems (20%). For remote computing services the dominant mode of operation is batch processing. Using remote computing services is less expensive and involves less risk than use of in-house installations. This preference is expected to change because of the possible economies offered by minicomputers and small business systems.
- MD group practices interviewed had a significant (25%) involvement with hospital data processing facilities.

b. Level Of User Satisfaction

- Respondents were asked to rate their computer equipment and services on a scale of 1-5. Eight-six percent of respondents using computers rated their in-house installations or remote computing service vendors. Almost uniformly, over 85% of the ratings were either 4 or 5 on the scale, indicating a very high degree of satisfaction among all groups.

- Over 70% of those groups not using computers indicated that computers were not needed because there was not enough volume to justify.

- c. Vendors

- Vendors mentioned by respondents are listed in Exhibit III-4. The well known equipment manufacturers are listed, but their degree of penetration of this market is small (number of mentions was 7% of total mentions). Remote computing service vendors listed tend to be small and regional in nature.
- A general conclusion of this study is that there are not yet established or dominant vendors in the medical and dental group markets.

- d. Current Expenditures

- Annual EDP expenditures for in-house systems and for remote computing services are reported in Exhibit III-5 and III-6. The averages and ranges of expenditures shown are estimated from scattered data. They are included because they are believed to be significant, particularly the \$31,000 per year average expenditure for in-house systems and the \$18,000 per year average for remote computing services for physician group practice. These two figures reconcile well with other data from another related INPUT report (Appendix D).

2. APPLICATION ANALYSIS

- a. Functional Use Of Computer Equipment And Services

- As previously noted, 34% of physicians and dental groups are using computer automation.
 - Applications are mostly limited to financial and administrative functions with patient management and professional services applications just beginning to appear.

EXHIBIT III-4

VENDORS MENTIONED
BY RESPONDENTS
(GROUPS)

| MD GROUP PRACTICES | DENTAL GROUPS | SOLO CO-LOCATED MDs |
|---|---|---|
| <u>EQUIPMENT</u> | <u>EQUIPMENT</u> | <u>EQUIPMENT</u> |
| IBM NCR DEC TI HONEYWELL LOCKHEED BYTRONICS SYCOR BURROUGHS | DATA GENERAL OLIVETTI POLYMORPHIC | NONE |
| REMOTE COMPUTING SERVICES | REMOTE COMPUTING SERVICES | REMOTE COMPUTING SERVICES |
| ITEL MCAUTO ST. MARY'S HOSPITAL ROCHESTER HOSPITAL MANAGEMENT SYSTEMS SCIENCE DYNAMICS COON, OLSEN & WEST GEMINI BUSINESS SERVICES | ADVANCE MANAGEMENT SYCOM PBP CLINIC SERVICE COMPANY CARA CORPORATION FIRST TRUST BANK SAFEGUARD BUSINESS SYSTEMS DATA MEDIC COMPUTER DYNAMICS ADA SERVICES AGENCY DENTAL HEALTH | MEDICAL ARTS HOSPITAL MV SYSTEMS MEDIPAC MOTE DATA SYSTEM MANAGEMENT SYSTEMS SERVICES FOR MEDICAL SOCIETY OF ATLANTA |

EXHIBIT III-5

ANNUAL EDP EXPENDITURES-
IN-HOUSE SYSTEMS
RANGE AND AVERAGE (▼)
(GROUPS)

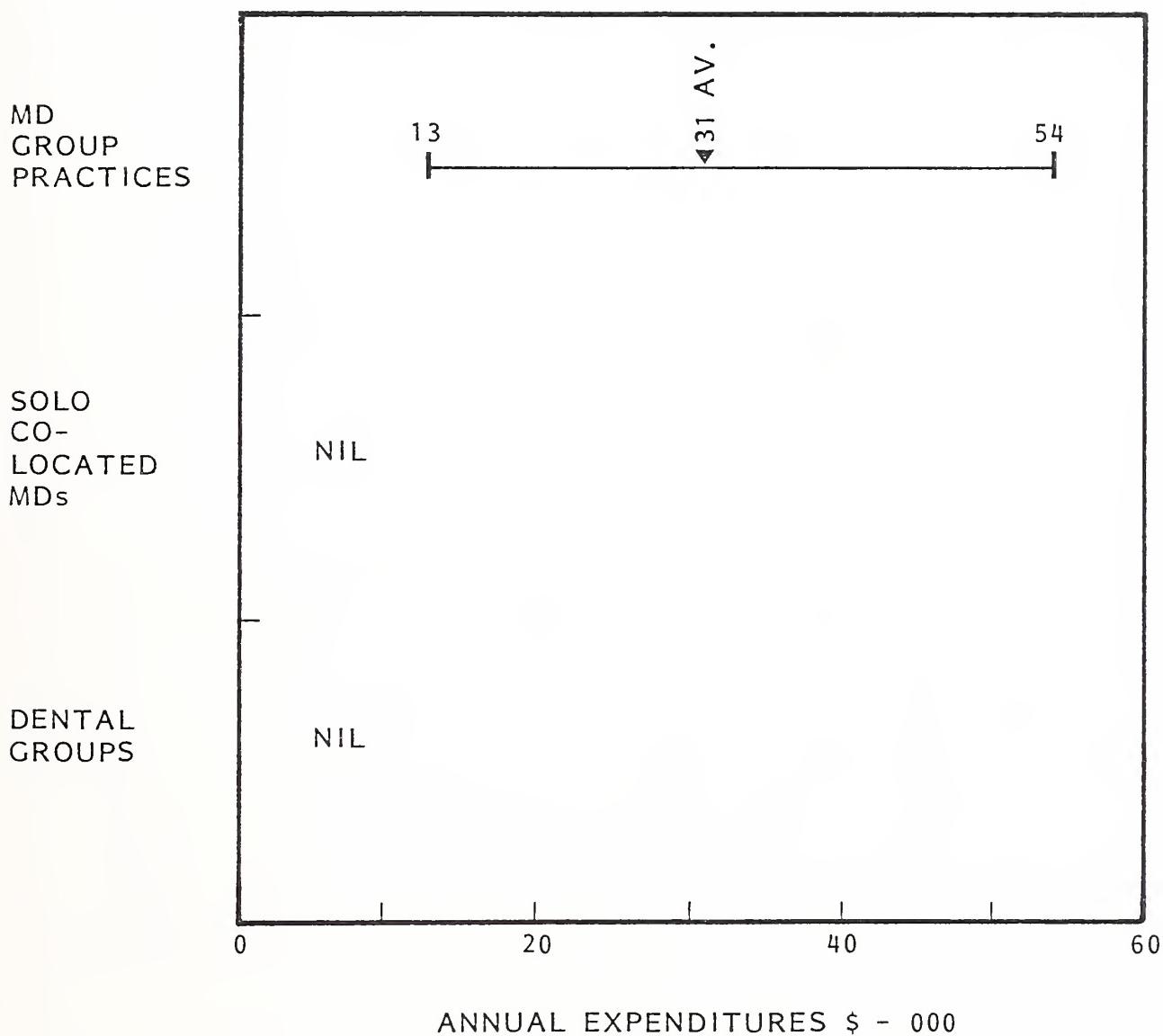
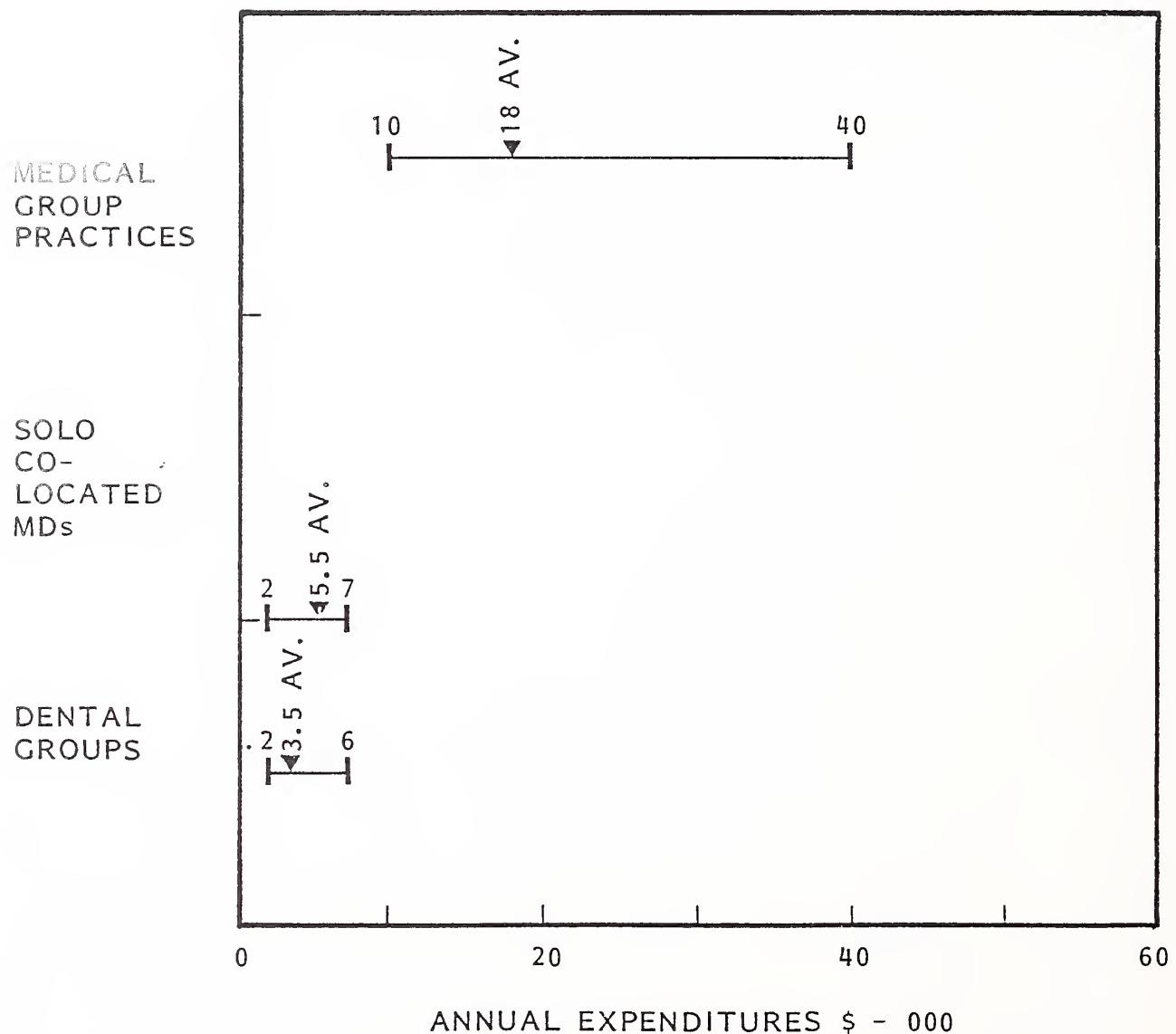


EXHIBIT III-6

ANNUAL EDP EXPENDITURES—
REMOTE COMPUTING SERVICES
RANGE AND AVERAGE (▼)
(GROUPS)



- Compared to the industry potential, penetration of the computer automation market is very small. INPUT estimates it to be 10%, and this is the figure used in this study for determining the present EDP expenditures.
 - An elaboration of the market data concerning physician group practices is included in a related INPUT report (Appendix D).
- The present degree of automation is shown in Exhibit III-7.
 - Patient billing (88%) and accounts receivable (84%) are the most heavily automated functions, as they are high paper volume functions.
 - Patient management functions are less than 7% automated, as a percent of all groups. Of the 34% of groups using computers, only 20% have automated patient management functions.
 - Professional services have hardly been touched.
 - The market for computer equipment and services for physician and dental groups is an unpenetrated but emerging market.
- b. Reasons For Automating
- Reasons for automating were given only for financial applications. There was insufficient data for patient management and professional services applications because of the low present utilization level of these applications.
 - For all groups, the four most dominant reasons for automation of the financial applications in order of importance are:
 - . Reduce costs.
 - . Better management control.

EXHIBIT III-7

FUNCTIONS NOW AUTOMATED
PERCENT OF GROUPS AUTOMATED
(GROUPS)

| TYPE OF PRACTICE | NUMBER IN SAMPLE | NUMBER AUTOMATED | PATIENT BILLING | ACCOUNTS RECEIVABLE | INSURANCE CLAIMS | PERSONNEL PAYROLL | GENERAL LEDGER | INVENTORY | PATIENT REGISTRATION | PATIENT RECORDS | LAB REPORTING | RADIOLOGY | PROFESSIONAL EDUCATION | PATIENT EDUCATION | RESEARCH | PERSONAL FINANCIAL REC. | INVESTMENT ANALYSIS | PROFESSIONAL SERVICES | | |
|---------------------|------------------|------------------|-----------------|---------------------|------------------|-------------------|----------------|-----------|----------------------|-----------------|---------------|-----------|------------------------|-------------------|----------|-------------------------|---------------------|-----------------------|--|--|
| | | | | | | | | | | | | | | | | | | | | |
| MD GROUP PRACTICES | 50 | 25 | 84% | 88% | 72% | 56% | 48% | 16% | 24% | 24% | 20% | 16% | 8% | - | - | 8% | - | | | |
| SOLO CO-LOCATED MDs | 50 | 9 | 89 | 67 | 67 | 11 | 22 | - | 11 | 11 | 11 | 11 | - | 11 | - | 11 | - | | | |
| DENTAL GROUPS | 50 | 17 | 94 | 88 | 52 | 29 | 35 | 12 | 29 | 35 | 12 | 6 | - | - | 6 | 12 | - | | | |
| TOTAL ALL GROUPS | 150 | 51 | 88% | 84% | 65% | 39% | 39% | 12% | 24% | 25% | 16% | 12% | 6% | 2% | 2% | 10% | - | | | |

- Improve schedules.
- Better quality control.

c. Level Of User Satisfaction

- Respondents from all groups uniformly reported a high degree of satisfaction with automation of financial services. At least 80% of all ratings were in the two highest categories, 4 and 5.

C. COMPUTER EQUIPMENT AND SERVICES MARKET

I. SIZE OF PRESENT MARKET AND MARKET FORECAST

- MD group practices total revenues by size of group are reported in Exhibit III-8.
- Total revenues for all physician and dental groups are reported in Exhibit III-9.
- Plans for use of (or further use of) computers as reported by respondents are shown in Exhibit III-10.
 - There is a considerable increase in the use of computer automation in all sectors of the market among those groups not using computers now but planning to within two years and those now using computers and planning to expand within two years.
 - MD Group Practices:
 - . Of the 50% of the groups now using computers, 32% plan to expand use within the next two years.

EXHIBIT III-8

MD GROUP PRACTICES -
 TOTAL REVENUES BY SIZE OF GROUP
 (GROUPS)

| SIZE OF GROUP | AVERAGE NUMBER OF MDs | TOTAL REVENUES - \$ MILLION | | | | NUMBER OF RESPONDENTS |
|-----------------------------|-----------------------|-----------------------------|------------------|-----------------|-------------------|-----------------------|
| | | < .2M (PERCENT) | .2-.5M (PERCENT) | .5-1M (PERCENT) | 1M-2.5M (PERCENT) | |
| MD GROUP SMALL 3-6 MDs | 5 | 18% | 41% | 29% | 6% | 17(56%) |
| MD GROUP MEDIUM 7-19 MDs | 13 | 22 | 11 | 22 | 34 | 11(90%) |
| MD GROUP LARGE 20+ MDs | 25 | - | 17 | - | 33 | 50(60%) |
| MD GROUP TOTAL | 10 | 16% | 28% | 22% | 19% | 32(64%) |

EXHIBIT III-9

PHYSICIAN AND DENTAL GROUPS
TOTAL REVENUES IN DOLLARS
(GROUPS)

| TYPE OF PRACTICE | TOTAL REVENUES - \$ MILLION | | | | |
|-------------------------------|-----------------------------|---------------------|--------------------|----------------------|--------------------|
| | < .2M (PERCENT) | .2-.5M (PERCENT) | .5-1M (PERCENT) | 1M-2.5M (PERCENT) | 2.5M+ (PERCENT) |
| MD GROUP PRACTICES | 16% | 28% | 22% | 19% | 15% |
| SOLO CO- LOCATED MDs | 76 | 14 | 8 | - | 2 |
| DENTAL GROUPS | 23% | 18% | 33% | 23% | 3% |

NUMBER OF RESPONDENTS = 108 (72%)

EXHIBIT III-10

PLANS FOR USE OF COMPUTERS
AS REPORTED BY RESPONDENTS:

- NON USERS PLANNING TO START WITHIN TWO YEARS
- PRESENT USERS PLANNING TO EXPAND WITHIN TWO YEARS
(GROUPS)

| TYPE OF PRACTICE | USING COMPUTERS - NOW/PLANNED IN TWO YEARS (PERCENT) | | | PRESENT USERS PLANNING TO EXPAND WITHIN TWO YEARS | | |
|----------------------------|--|---------------------------------|------------------------------------|--|---|-----|
| | NUMBER IN SAMPLE | NUMBER NOW AUTO- MATED | NUMBER PLANNING TO EXPAND | NUMBER PRESENT USERS PLANNING TO EXPAND | PERCENT PRESENT USERS PLANNING TO EXPAND | |
| MD GROUP PRACTICES | 20 | 40 | 60 | 100 | 50 | 25 |
| | | | | | | 32% |
| SOLO CO- LOCATED MDs | 50 | 50 | 50 | 9 | 1 | 2 |
| DENTAL GROUPS | 50 | 50 | 50 | 17 | 3 | 6 |
| TOTAL ALL GROUPS | 150 | 150 | 150 | 51 | 20 | 13% |

PRESENTLY USING COMPUTERS

NON USERS PLANNING TO START WITHIN TWO YEARS

- . The number of groups using computers is expanding at the rate of 8% per year (50% to 58%).
- Solo Co-Located MDs:
 - . Of the 18% of the groups now using computers, 2% plan to expand use within the next two years (18% to 28%).
 - . The number of groups using computers are expanding at the rate of 25% per year.
- Dental Groups:
 - . Of the 34% of the groups now using computers, 6% plan to expand use within the next two years.
 - . The number of groups using computers are expanding at the rate of 19% per year (34% to 48%).
- Total All Groups:
 - . Of the 34% of the groups now using computers, 13% plan to expand use within the next two years.
 - . The number of groups using computers are expanding at the rate of 15% per year (34% to 45%).
- Considering the combined effects of more first time users of computer automation and expanding applications in all groups, INPUT estimates the AAGR for computer equipment and services in this market to be 24%.

- The market data for computer equipment and services shown in Exhibit III-11 are based on total annual revenues, data processing revenues as a percent of total revenue, and percent market penetration (see Appendix B: Market Forecast Data).
- The present EDP market for all groups is estimated to be \$29 million and is expected to expand to \$85 million in five years.

D. FINANCIAL SERVICES MARKET

I. PATIENT ACCOUNTING AND COLLECTIONS

a. Billing And Collections

- When payments are collected for all groups are shown in Exhibit III-12.
 - MDs in group practice and solo co-located MDs are nearly identical with respect to when payments are collected. The most prevalent method (60%) is to mail the bills monthly and then wait for collection, which results in a receivables problem. About 26% of the bills are paid immediately after service.
 - Dental groups are different, with 52% of the bills collected immediately after service and only 40% mailed monthly, resulting in improved cash flow.
- With respect to direct billing of major third party payers, Medicare, Medicaid, Blue Cross, and commercial insurance companies:
 - Physicians in group practice and solo co-located MDs nearly all bill the four third party payers directly.

EXHIBIT III-11

FORECAST OF USER EXPENDITURES FOR
 COMPUTER EQUIPMENT AND SERVICES
 FOR MEDICAL AND DENTAL GROUPS
 (1979 - 1984)
 (GROUPS)

| TYPE OF GROUP | EXPENDITURES | |
|---------------------------|----------------------|----------------------|
| | 1979 (\$ MILLION) | 1984 (\$ MILLION) |
| MD GROUP PRACTICES | \$15 | \$44 |
| SOLO CO-LOCATED MDs | 7 | 21 |
| DENTAL GROUPS | 7 | 20 |
| TOTAL | \$29 | \$85 |

AAGR = 24%

EXHIBIT III-12

WHEN PAYMENTS ARE COLLECTED
(GROUPS)

| TYPE OF PRACTICE | BILL MAILED (PERCENT) | BILL AT TIME OF VISIT (PERCENT) | PAYMENT IMMEDIATELY AFTER SERVICE (PERCENT) | PREPAID (PERCENT) |
|---------------------|-----------------------|---------------------------------|---|-------------------|
| MD GROUP PRACTICES | 62% | 8% | 26% | 4% |
| SOLO CO-LOCATED MDs | 57 | 16 | 27 | 0 |
| DENTAL GROUPS | 40 | 4 | 52 | 4 |
| TOTAL ALL GROUPS | 53% | 9% | 35% | 3% |

NUMBER OF RESPONDENTS = 133(87%)

- Dental groups do very little billing to Medicare and Medicaid. Nearly all groups bill Blue Cross and commercial insurance companies. Twenty-four percent of the groups do no direct billing of third party payers.
- The percent of respondents preparing billing directly by computer is shown in Exhibit III-13.
- When routine methods of bill collection have been exhausted, 51% of all groups try extraordinary methods of collection themselves first, and then turn the bills over to a outside collection agency as a last resort. Forty-nine percent turn such bills over to an agency first. The practice among all groups is quite consistant.
- All groups consider approximately 130 days to be the length of time when an unpaid bill is declared a bad debt.
- All groups reported that 6% of total receivables were classified as bad debt. With over \$15 billion in outstanding receivables for all groups, there is a total of \$900 milion classified as bad debt outstanding.
- Among all groups, 70% rated the degree of satisfaction with the present collection system a 3 or 4. Compared to other ratings in this study, this is a low rating and indicates a desire for improvement among all groups.
- Typical comments by respondents:
 - "Bad debt prevention is a losing game."
 - "We would increase staff and expense to increase cash flow."
 - "Public aid means no control."
 - "The process is OK, it's the people."

EXHIBIT III-13

PERCENT OF RESPONDENTS PREPARING BILLING
DIRECTLY BY COMPUTER
(GROUPS)

| TYPE OF PRACTICE | MEDICARE (PERCENT) | MEDICAID (PERCENT) | BLUE CROSS (PERCENT) | COMMER- CIAL (PERCENT) | PATIENT (PERCENT) | ALL PAYERS (PERCENT) |
|---------------------------|-----------------------|-----------------------|----------------------------|------------------------------|----------------------|----------------------------|
| MD GROUP PRACTICES | 36% | 39% | 36% | 32% | 44% | 38% |
| SOLO CO-LOCATED MDs | 12 | 12 | 6 | 6 | 10 | 9 |
| DENTAL GROUPS | NIL | NIL | 27 | 27 | 25 | 26 |
| TOTAL ALL GROUPS | 27% | 29% | 23% | 22% | 27% | 25% |

- "Collections are difficult."
- "Bad checks are a problem."

b. Accounts Receivable

- The percent of respondents reporting average age of accounts receivable over 90 days:
 - MD Group Practice 26%
 - Solo Co-Located MDs 20%
 - Dental Groups 43%
- Ninety-nine percent of respondents furnished data on average age of accounts receivable, so the preceding data is a good indication of the problems with timely collections, and the consequent negative impact on cash flow all of the groups face.
- Percent of total billing represented by each payer are shown in Exhibit III-14. Physicians in group practice and solo co-located MDs have substantial billings with each category of payer, but the largest amounts are paid directly by the patient. Dentists reported negligible billings to Medicare and Medicaid and over 50% of billings directly to the patient.
- The average age of accounts receivable among the groups are as follows:

- MD Group Practices 67 days
- Solo Co-Located MDs 51 days
- Dental Groups 70 days

EXHIBIT III-14

PERCENT OF TOTAL BILLING
REPRESENTED BY EACH PAYER
(GROUPS)

| TYPE OF PRACTICE | MEDICARE (PERCENT) | MEDICAID (PERCENT) | BLUE CROSS (PERCENT) | COMMERCIAL (PERCENT) | PATIENT (PERCENT) |
|---------------------|--------------------|--------------------|----------------------|----------------------|-------------------|
| MED GROUP PRACTICES | 13% | 13% | 13% | 20% | 41% |
| SOLO CO-LOCATED MDs | 17 | 15 | 14 | 14 | 40 |
| DENTAL GROUP | NIL | NIL | 24 | 23 | 53 |
| TOTAL ALL GROUPS | 14% | 14% | 14% | 17% | 41% |

- The solo co-located MDs have a less severe problem with a 51 day average age, but still 20% reported over 90 days.
- The dental groups report a very severe problem with an average age of 70 days and 43% reported over 90 days.
- All groups are experiencing a difficult problem collecting accounts receivable. Computer based collection systems that are effective in advancing collections would result in large improvements in cash flow, and consequently would be cost effective.
- Total amounts of outstanding accounts receivable by age are shown in Exhibit III-15. Note that the percent response to this question was small (6%), particularly among the solo co-located MDs. However, the data shows the magnitude of the problem. Among all groups there are over \$2 billion receivables over 60 days outstanding.

c. Present Use Of Credit Cards

- Respondents accepting credit cards and the amount of billing paid by credit card and by cash are reported in Exhibit III-16. Forty-three percent of all groups accept credit cards. Acceptance was highest with dental groups (43%) and lowest among solo practices (14%).
 - Among those groups accepting credit cards, VISA and Mastercharge were universally accepted. There was no significant mention of any other card.
 - Although 43% accept credit cards, only 4% of billing was paid by card, indicating very little usage.
 - Among all groups, 8% of billing was paid by cash (meaning actual cash, not checks).

EXHIBIT III-15

AMOUNTS OF OUTSTANDING RECEIVABLES -
BY AGE
AVERAGE PER GROUP
(GROUPS)

| TYPE OF PRACTICE | IN- HOUSE UN- BILLED (\$ 000) | UNDER 30 DAYS (\$ 000) | 30-60 DAYS (\$ 000) | 60-90 DAYS (\$ 000) | OVER 90 DAYS (\$ 000) | TOTAL OUT- STAND- ING (\$ 000) |
|----------------------------|---|---------------------------------|---------------------------|---------------------------|--------------------------------|--|
| MD GROUP PRACTICES | \$44 | \$28 | \$24 | \$19 | \$9 | \$124 |
| SOLO- CO-LOCATED MDs | NIL | 7 | 17 | 2 | NIL | 30 |
| DENTAL GROUPS | 27 | 37 | 31 | 24 | 14 | 133 |

NUMBER OF RESPONDENTS:

| | | |
|---------------------|---|---------|
| MD GROUP PRACTICES | = | 12(24%) |
| SOLO CO-LOCATED MDs | = | 3(6%) |
| DENTAL GROUPS | = | 7(14%) |
| TOTAL ALL GROUPS | = | 22(15%) |

EXHIBIT III-16

PERCENT OF BILLS
PAID BY CREDIT CARD OR CASH
(GROUPS)

| TYPE OF PRACTICE | RESPONDENTS ACCEPTING CREDIT CARDS (PERCENT) | PAID BY CREDIT CARD (PERCENT) | PAID BY CASH (PERCENT) |
|---------------------|--|-------------------------------|------------------------|
| MD GROUP PRACTICES | 50% | 3% | 8% |
| SOLO CO-LOCATED MDs | 14 | NIL | 8 |
| DENTAL GROUPS | 65 | 4 | 8 |
| TOTAL ALL GROUPS | 43% | 4% | 8% |

NUMBER OF RESPONDENTS = 134(89%)

2. ASSESSMENT OF THE MEDICAL CREDIT CARD CONCEPT

a. Rating

- Every effort was made to insure an accurate and in-depth rating of the proposed medical credit card system (Medicard). One hundred forty out of 150 (93%) rated Medicard. First, an overall rating of the card was made, and then each individual feature was rated.
- The wording of the question as it appeared in the questionnaire is as follows:
 - I would like to briefly explain a new proposed medical credit card system and get your reaction to the overall concept and then to the attractiveness of the individual features. The novel card system would have the following features:
 - Include identification and current health insurance coverage as part of the card.
 - Emergency medical data, i.e., bloodtype, allergies.
 - Provide a personal credit line in addition to insurance.
 - Produce all insurance claims and file and collect them for you.
 - Provide guarantee of payment of claims.
 - Produce and collect patient bills, guaranteeing the patient bill to you.
 - Please rate the attractiveness of the individual features.
 - Identification.
 - Verify health insurance coverage.

- . Provide emergency medical data.
 - . Produce, file, and collect insurance claims.
 - . Provide guarantee of payment of claims.
 - . Produce, collect, and guarantee patient bills.
- Ratings are on a scale of 1 to 5, with 5 being high. Results of the rating are shown in Exhibits III-17 through III-23. The graphic presentation in these exhibits is the best way to review the results. However, as a simple measure, any rating of over 50% for the total of 4 and 5 ratings is positive.
- A summary of the ratings follow.
 - Overall, Exhibit III-17:

Percent Rated 4 to 5

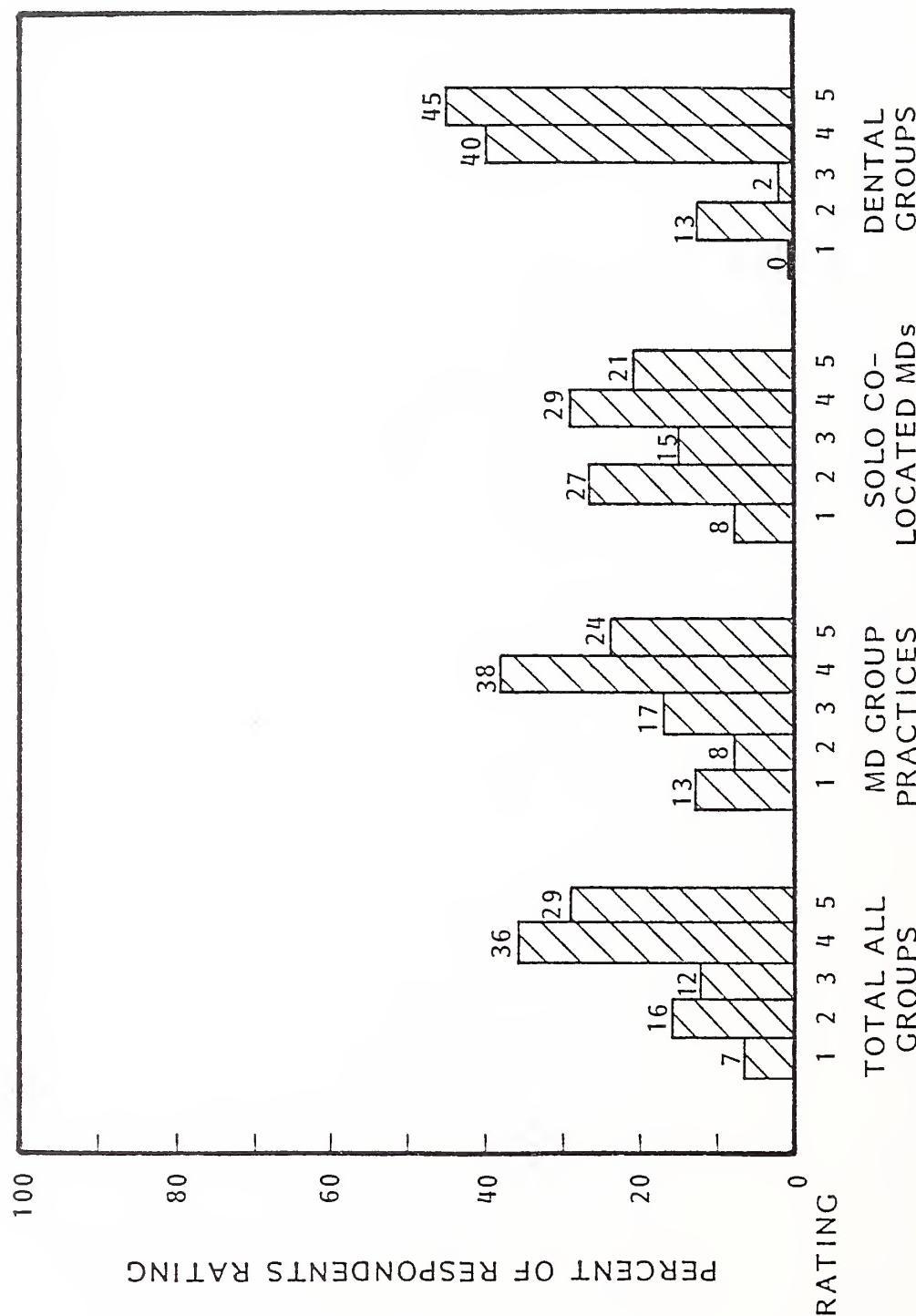
| | |
|----------|----|
| Total | 65 |
| MD Group | 62 |
| Solo MD | 50 |
| DDS | 85 |

This is a positive response and reconciles with the impressions obtained in the on-site interviews, although the Solo co-located MD groups rating is marginal with respect to the overall rating.

- Identification, Exhibit III-18:

EXHIBIT III-17

OVERALL RATING OF
PROPOSED MEDICAL CREDIT CARD SYSTEM
(GROUPS)



RATING OF IDENTIFICATION FEATURE OF
PROPOSED MEDICAL CREDIT CARD SYSTEM
(GROUPS)

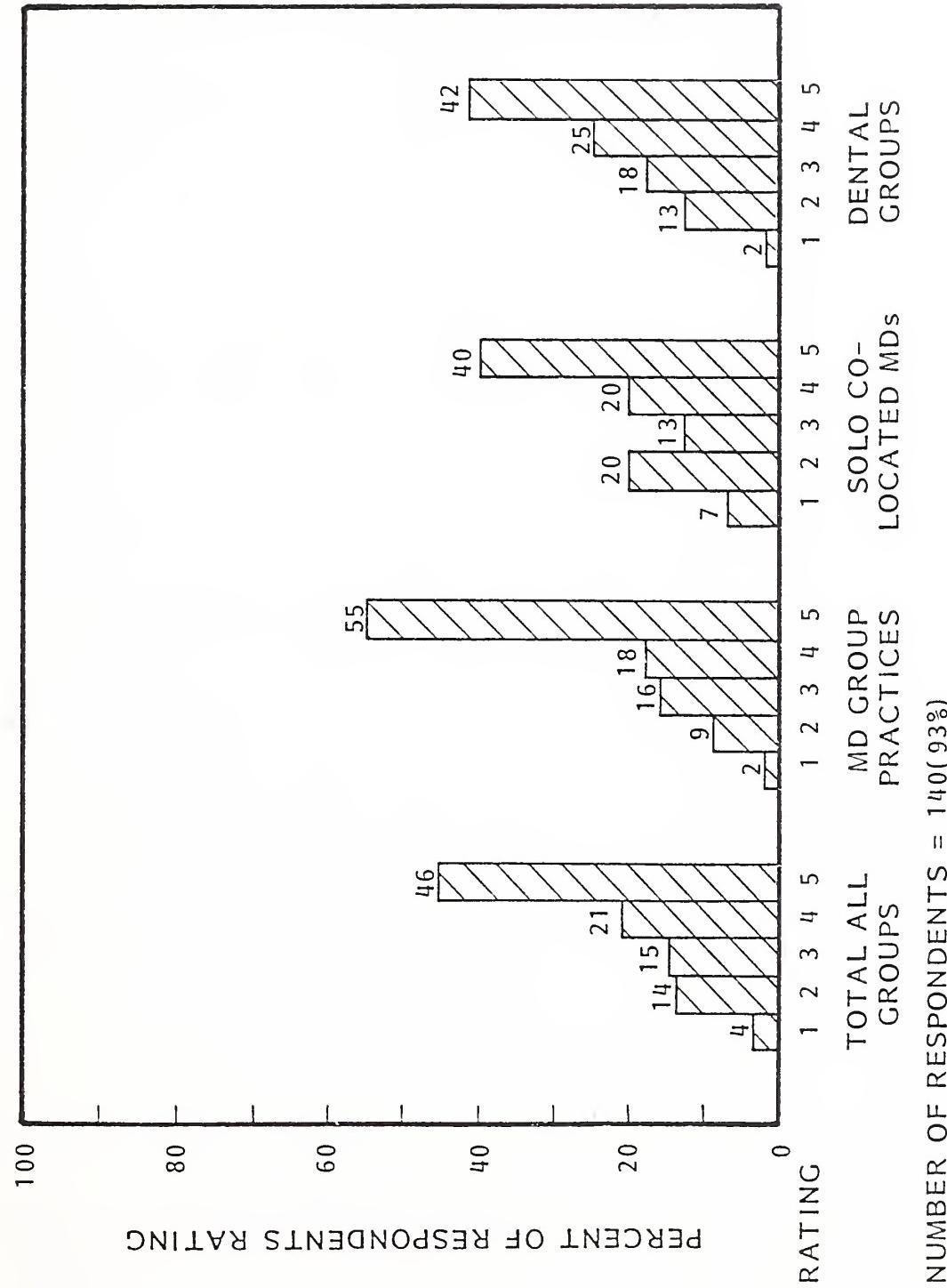


EXHIBIT III-19

RATING OF VERIFICATION OF HEALTH INSURANCE FEATURE OF
PROPOSED MEDICAL CREDIT CARD SYSTEM
(GROUPS)

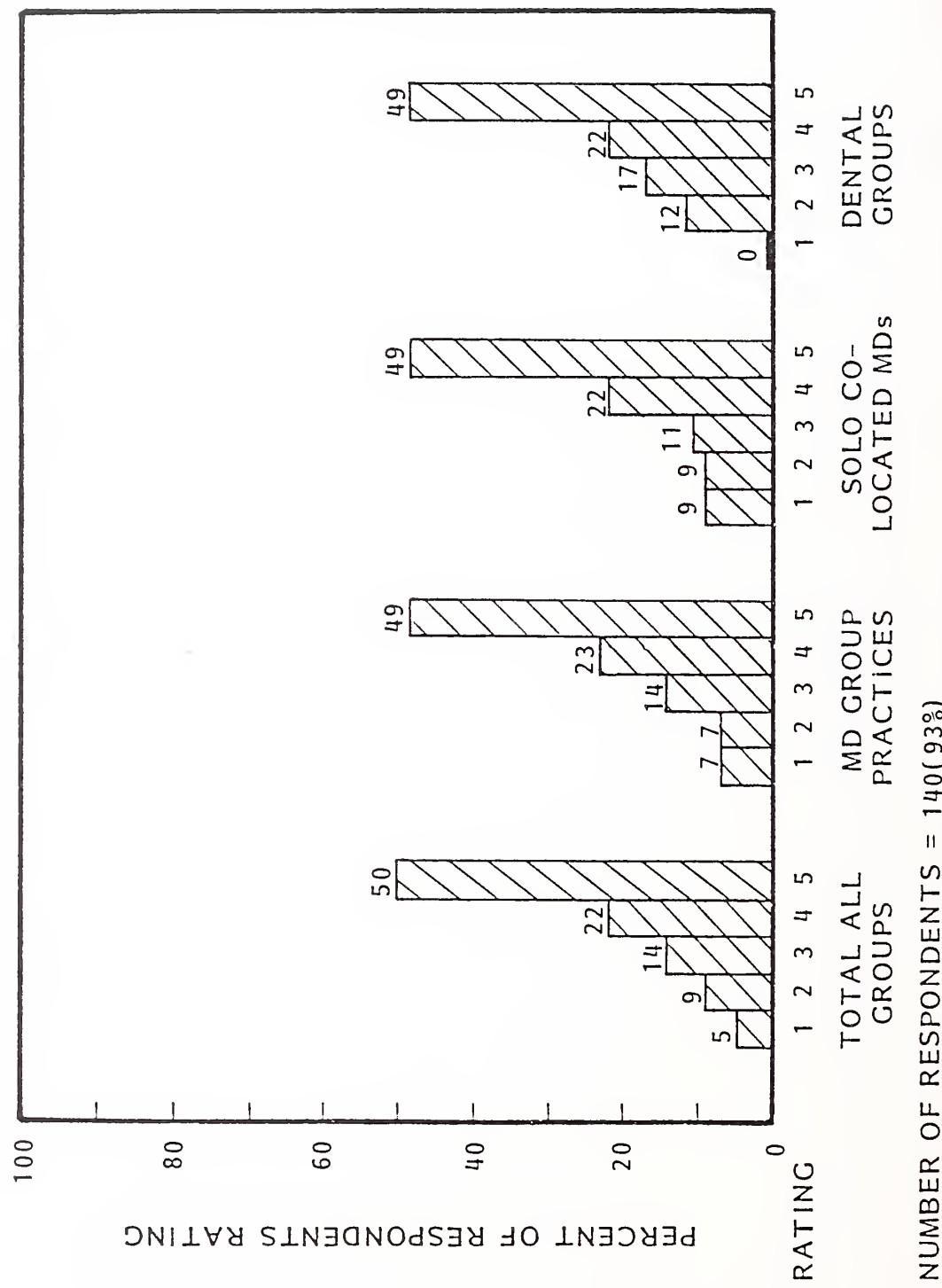


EXHIBIT III-20

RATING OF EMERGENCY MEDICAL DATA FEATURE OF
PROPOSED MEDICAL CREDIT CARD SYSTEM
(GROUPS)

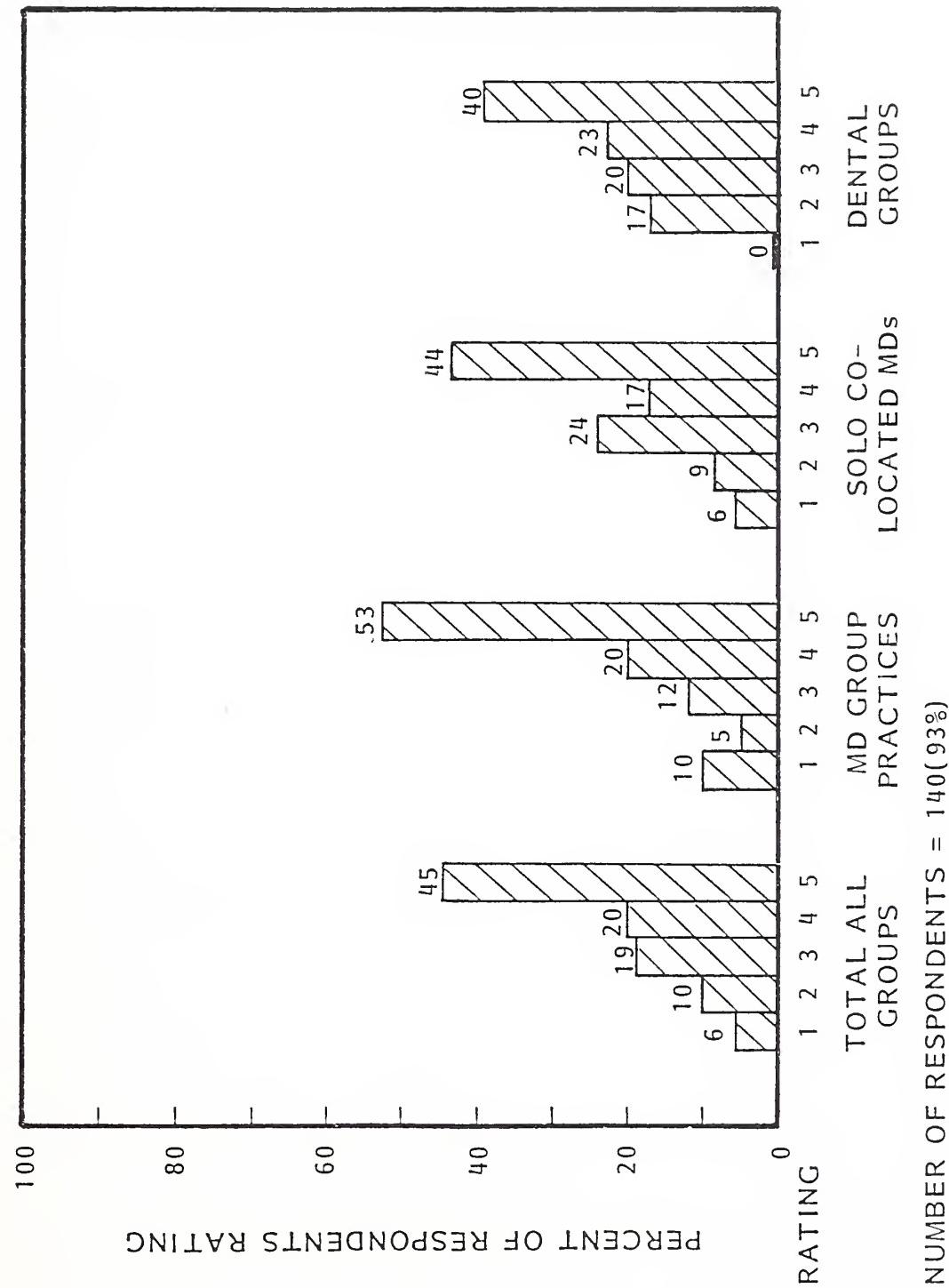


EXHIBIT III-21

RATING OF FILING AND COLLECTING INSURANCE CLAIMS FEATURE OF
PROPOSED MEDICAL CREDIT CARD SYSTEM
(GROUPS)

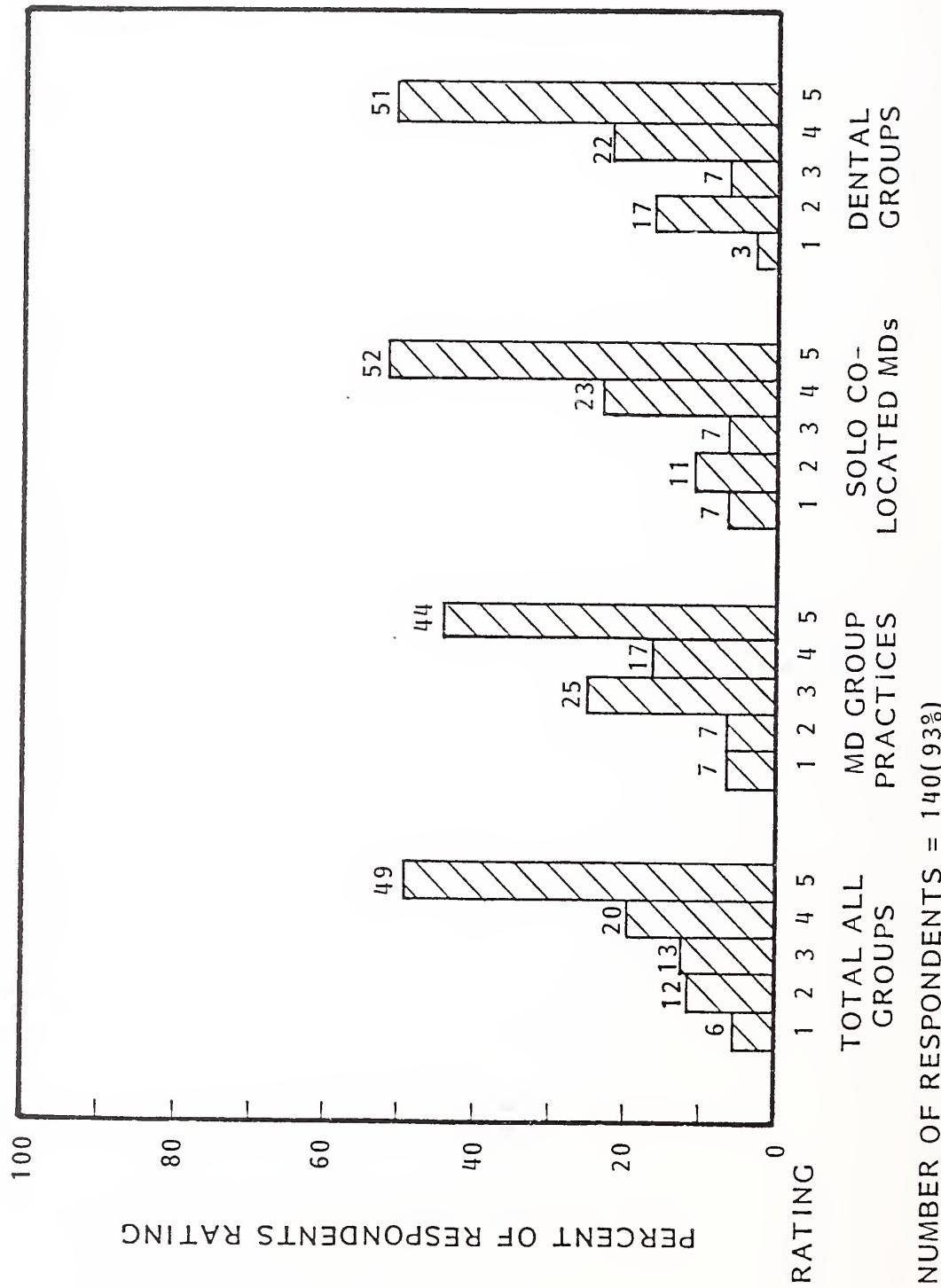


EXHIBIT II-22

RATING OF GUARANTEE OF PAYMENT OF INSURANCE CLAIMS FEATURE OF
PROPOSED MEDICAL CREDIT CARD SYSTEM
(GROUPS)

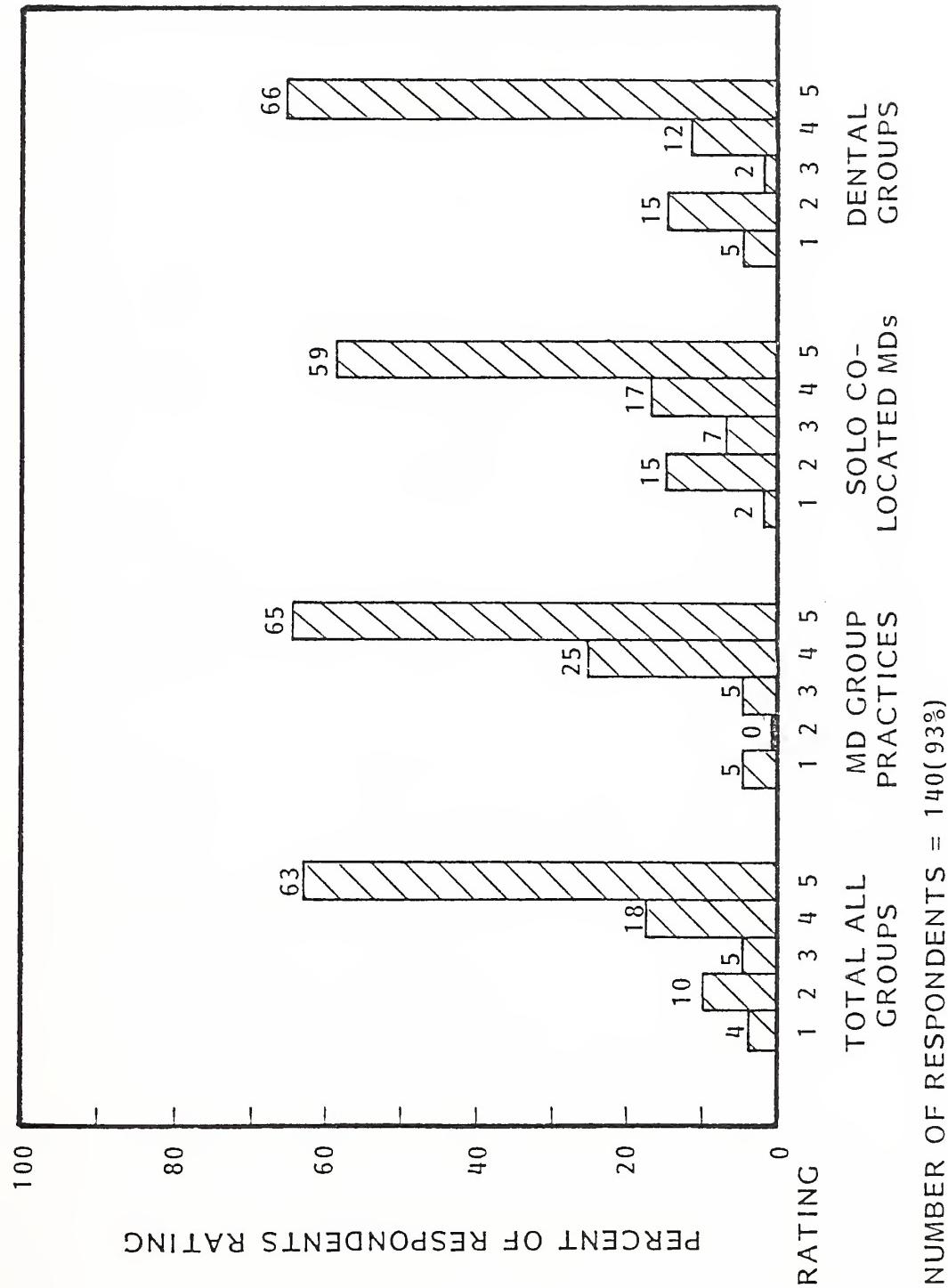
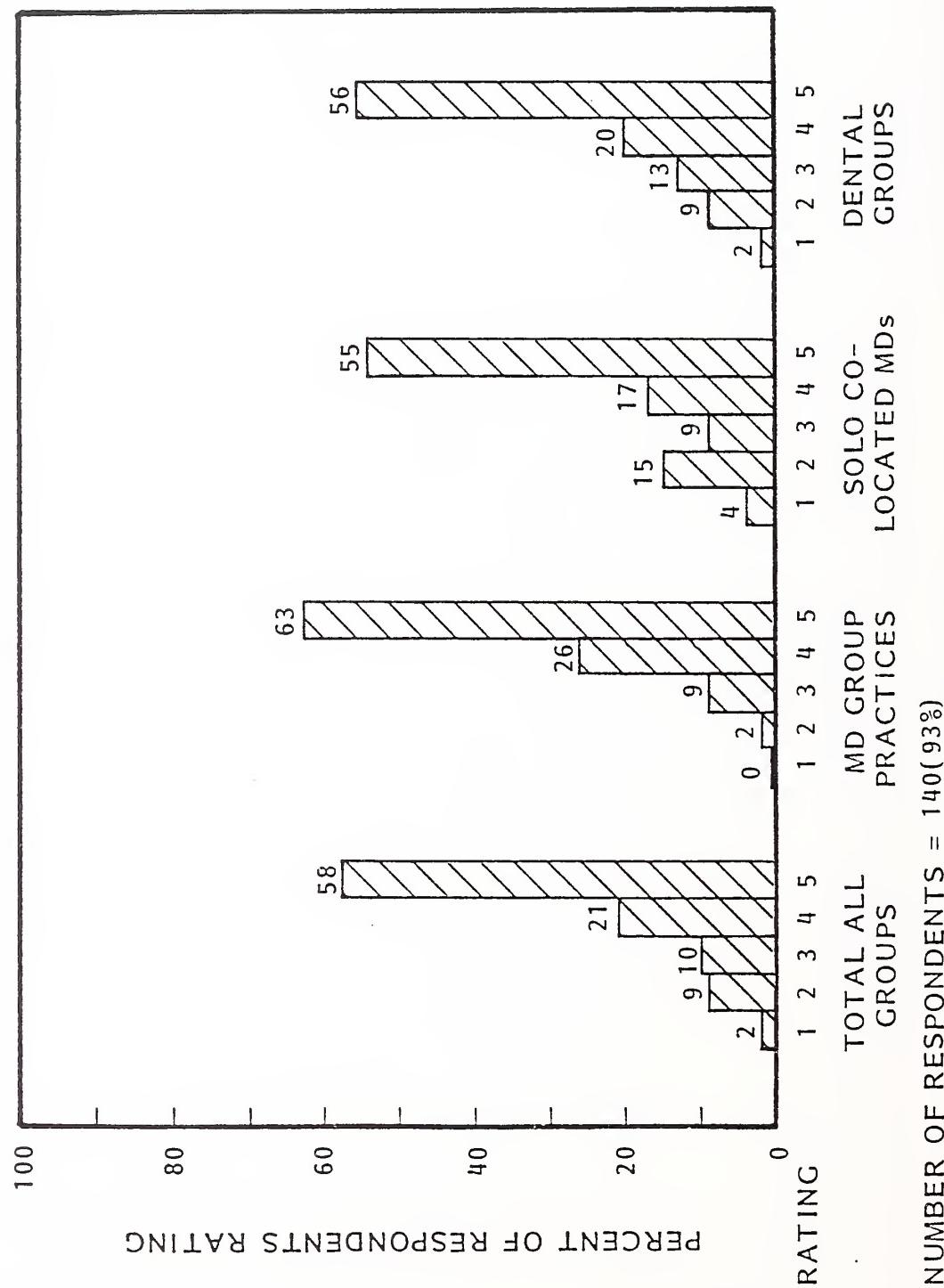


EXHIBIT III-23

RATING OF GUARANTEE OF PAYMENT AND
COLLECTING PATIENT BILLS FEATURE OF
PROPOSED MEDICAL CREDIT CARD SYSTEM
(GROUPS)



Percent Rated 4 to 5

| | |
|----------|----|
| Total | 67 |
| MD Group | 73 |
| Solo MD | 60 |
| DDS | 67 |

Groups found the identification feature attractive, but were generally skeptical about keeping the data current.

- Verification of Insurance, Exhibit III-19:

Percent Rated 4 to 5

| | |
|----------|----|
| Total | 72 |
| MD Group | 72 |
| Solo MD | 71 |
| DDS | 71 |

A very high rating, verification is one of the most important feature of the card.

- Emergency Medical Data, Exhibit III-20:

Percent Rated 4 to 5

| | |
|----------|----|
| Total | 65 |
| MD Group | 73 |
| Solo MD | 61 |
| DDS | 63 |

This rating is believed to be misleading, generally physicians felt that they would not rely on the coding because of the difficulty in keeping it

current and the importance of it in an emergency. INPUT recommends that this feature be dropped from the card.

- Collecting Insurance Claims, Exhibit III-21:

Percent Rated 4 to 5

| | |
|----------|----|
| Total | 69 |
| MD Group | 61 |
| Solo MD | 75 |
| DDS | 73 |

- Guarantee of payment of insurance claims, Exhibit III-22.

Percent Rated 4 to 5

| | |
|----------|----|
| Total | 81 |
| MD Group | 90 |
| Solo MD | 76 |
| DDS | 78 |

This high rating indicates the importance of the collecting insurance claims feature of the card system.

Guarantee of payment of insurance claims is one of two most attractive features of the card system and is of importance in selling groups on using the card system.

- Guarantee of Payment of Patient Bills, Exhibit III-23:

Percent Rated 4 to 5

| | |
|----------|----|
| Total | 79 |
| MD Group | 89 |
| Solo MD | 72 |
| DDS | 76 |

Guarantee of payment of patient bills is the other most attractive feature and is of equal importance as guaranteeing payment of insurance claims.

b. User Perceptions And Comments

- After completing the ratings of the proposed medical credit card system, respondents were asked to elaborate on their assessment of the card. Typical remarks are shown in Exhibit III-24.
- Respondents were also asked what they did not like about the card. Typical remarks are shown in Exhibit III-25.

c. Overall Assessment Of The Medicard Concept

- All groups reaction to the proposed medical credit card systems is clearly favorable, in many instances enthusiastic.
- The proposal is regarded by most as being extremely ambitious, and properly so. This leads to widespread skepticism about the vendor's ability to successfully implement the system and keep it current with the myriad of required changes of information.
- There is concern over losing control over patient billing, the financial backbone of the practice. If they give it up to an outside organization, and it fails, they are in severe financial difficulty.

EXHIBIT III-24

TYPICAL REMARKS BY RESPONDENTS CONCERNING
THE PROPOSED MEDICAL CREDIT CARD SYSTEM
(GROUPS)

- "SOUNDS GOOD."
- "MUST SEE IT IN ACTION BEFORE CONSIDERING IT."
- "WOULD ONLY CONSIDER IT IF A LOT OF INSURANCE COMPANIES WENT THAT WAY."
- "ASSURED PAYMENT IS THE BEST PART."
- "WE ARE CONCERNED OVER LOSING CONTROL OF BILLING!"
- "PAYMENT NEEDS TO BE FAST AND IN FULL!"
- "WHAT WOULD IT COST?"
- "A GOOD IDEA FOR OTHERS BUT WOULD NOT USE HERE!"
(SOLO PRACTICE MD)

EXHIBIT III-25

TYPICAL REMARKS BY RESPONDENTS EXPRESSING
WHAT THEY DON'T LIKE ABOUT THE CARD
(GROUPS)

- "HOW TO VERIFY CURRENCY OF COVERAGE - CRITICAL TO PREVENT REBILLING!"
- "ANY FEE WE WOULD HAVE TO PAY."
- "TAKES AWAY CONTROL OVER BILLING."
- "WOULD LOSE PERSONAL CONTACT WITH THE PATIENT IF COLLECTION IS AUTOMATED."
- "POSSIBLE LOSS OR THEFT OF CARDS."
- "DUPLICATES EXISTING SYSTEM - CAN'T RUN DUAL SYSTEMS."
- "CATEGORIZES PEOPLE - LUMPS THEM TOGETHER."
- "POSSIBLE DISCLOSURE OF CONFIDENTIAL PATIENT INFORMATION!"

- It will be difficult at best to sell the service without demonstrating its successful use by a sample community. Nobody wants to be first in such a revolutionary change.
- The overwhelming attraction of the proposed system is the great financial advantage associated with advancing the cash flow. Internal cost savings are attractive as well but are smaller in magnitude.
- Getting rid of the problems involving third party payers and governmental regulation is also attractive.
- To sum up, the proposed card system concept is highly regarded by a large majority of potential users and the market for the services is real and unpenetrated.

3. MARKET POTENTIAL OF MEDICARD SYSTEM

- At 3% of total revenue as a charge for the system, the potential market for the medicard system is estimated to be \$649 million (Exhibit III-26). This figure is for the card system alone and does not include any allowance for other computer services or financial services.

4. USE OF FINANCIAL SERVICES

- Fifty-two percent of all groups are using financial services now. The largest percentage of use is by MD group practices (66%). Use of financial services is shown in Exhibit III-27.
- The predominant use of financial services is for equipment leasing, 62% for all groups. This is primarily attributable to leasing of photocopy equipment.
- Present uses also include (all groups):

EXHIBIT III-26

POTENTIAL MARKET FOR PROPOSED
 MEDICAL CREDIT CARD SYSTEM
 FOR MEDICAL AND DENTAL GROUPS
 (GROUPS)

| TYPE OF PRACTICE | TOTAL NUMBER | AVERAGE REVENUE PER EACH MD OR DDS | TOTAL ANNUAL REVENUE (\$ MILLION) | POTENTIAL MARKET - 3% OF REVENUE (\$ MILLION) |
|---------------------|--------------|------------------------------------|-----------------------------------|---|
| MD GROUP PRACTICES | 75,694 | \$110,000 | \$ 8,300 | \$250 |
| SOLO CO-LOCATED MDs | 69,508 | 110,000 | 7,600 | 228 |
| DENTAL GROUPS | 62,216 | 91,000 | 5,700 | 171 |
| TOTAL ALL GROUPS | - | - | \$21,600 | \$649 |

ASSUMED CHARGE = 3% OF COLLECTIONS

EXHIBIT III-27

USE OF FINANCIAL SERVICES
(GROUPS)

| TYPE OF PRACTICE | USING FINANCIAL SERVICES NOW (PERCENT) | PERCENT OF THOSE NOW USING FINANCIAL SERVICES | | | | | | |
|----------------------------|---|---|---------------------------------|---------------------------|-----------------|-------------------------|----------------|-----------------|
| | | AVER AGE NUMBER OF FINAN- CIAL SER- VICES PER USER | CON- STRUC- TION LOANS | EQUIP- MENT LEASING | INVEST- MENT | CASH MANAGE- MENT | MORT- GAGES | CO-OP BUYING |
| MD GROUP PRACTICES | 66% | 1.8 | 9% | 76% | 27% | 21% | 24% | 21% |
| SOLO CO- LOCATED MDs | 46% | 1.2 | NIL | 35 | 26 | 30 | 13 | 13 |
| DENTAL GROUPS | 44% | 2.2 | 23 | 68 | 64 | 23 | 23 | 18 |
| TOTAL ALL GROUPS | 52% | 1.7 | 10% | 62% | 37% | 24% | 21% | 18% |

NUMBER OF RESPONDENTS = 122(81%)

- Investment 37%
 - Cash Management 24%
 - Mortgages 21%
 - Co-op buying 18%
 - Construction loans 10%
- Eighty-five percent of present users of financial services (all groups) rated the level of satisfaction 4 or 5.
 - There is no significant use of factoring or borrowing against receivables.
 - Institutions providing financial services, as reported by respondents, are listed in Exhibit III-28.
 - Equipment leasing by Xerox heads the list.
 - E.F. Hutton was a prominent choice for investment management.
 - Other institutions are primarily local in nature and there is no established dominant institution.

EXHIBIT III-28

INSTITUTIONS PROVIDING
FINANCIAL SERVICES AS REPORTED
BY RESPONDENTS
(GROUPS)

CONSTRUCTION LOANS

- NONE

EQUIPMENT LEASING

- XEROX
- TRANSLEASING
- PARILIAMENT LEASING
- ROYAL BOND
- TOPA LOAN AND SAVINGS
- MEDICAL EQUIPMENT CO.
- MEDACOZIAN BANK (CHICAGO)
- OFFICE EQUIPMENT STORE

INVESTMENT MANAGEMENT

- E. F. HUTTON
- PROFIT SHARING BOARD
- MASSACHUSETTS INVESTMENTS
- CPAs

CASH MANAGEMENT

- E. F. HUTTON
- ST. LUKES HOSPITAL
- BANKS
- CPAs

MORTGAGES

- ROCHESTER HEALTH NETWORK
- BANKS

CO-OP BUYING

- ROCHESTER HOSPITAL GROUP
- ST. MARY'S HOSPITAL
- MEDICAL CENTERS
- MT. SINAI HOSPITAL (CHICAGO)
- ARCHER DENTAL
- CENTRAL DENTAL SUPPLY

IV COMPUTER AND FINANCIAL SERVICES MARKET IN HOSPITALS

A. INDUSTRY STRUCTURE

I. FUNCTIONAL DESCRIPTION

- The industry which is the focus of this part of the study is the non-Federal Government operated short term general hospital. In particular, it is SIC-8062, General Medical and Surgical Hospitals.
- In 1976, the latest year for which there is published data, 5956 hospitals provide just under one million beds.
- The average size for the groups is 160 beds.
- This group represents 84% of the total number of hospitals in the United States.
- Total expenses for the group were over \$45 billion in 1976. Average annual expense per hospital was \$9.5 million.
- Total health care costs in the United States have risen to an estimated 9% of total GNP.
- For further information see Appendix D - Related INPUT Reports.

- The interview sample is shown in Appendix A, Exhibit A-2. Seventy-six hospitals were interviewed, of which 24 were on-site interviews. Each telephone interview involved two individuals: a financial officer and the data processing director. Each on-site interview involved three individuals: administrator, financial officer, and data processing director. In all, 176 individuals were interviewed throughout the United States.
- The hospitals are categorized in this report as small (50-100 beds), medium (100-500 beds), and large (over 500 beds).
- Two questionnaires were used: executive and financial, and data processing director. Copies are in Appendix C.
- The type of hospitals included in the interview sample are:
 - Independent, non profit 79%
 - Govermental (state and local) 15%
 - For profit (proprietary) 6%
- Specific characteristics of the hospitals included in the interview sample are shown in Exhibit IV-1.
 - Annual expense per hospital ranges from \$4-45 million.
 - Number of employees ranges from 205 to 2,180.
 - Small hospitals have an occupancy problem, an average of only 58%, which translates into a cash flow problem.
- Overall, one-third of the hospitals were planning a physical expansion of their facilities, but two-thirds of the group of large hospitals were expanding.

EXHIBIT IV-1

CHARACTERISTICS OF THE HOSPITALS
 INCLUDED IN THE INTERVIEW SAMPLE -
 AVERAGES
 (HOSPITALS)

| SIZE BY NUMBER OF BEDS | ADMISSIONS CENSUS | PERCENT OCCUPANCY | AVERAGE LENGTH OF STAY (DAYS) | EMERGENCY VISITS | OUT PATIENT VISITS | OPERATING INCOME (\$ MILLION) | ANNUAL EXPENSE (\$ MILLION) | PAYROLL (\$ MILLION) | PERSONNEL |
|------------------------|-------------------|-------------------|-------------------------------|------------------|--------------------|-------------------------------|-----------------------------|----------------------|-----------|
| SMALL 50-100 | 3,000 | 49 | 58% | 6.7 | 17,000 | \$ 12,000 | \$ 5.0M | \$ 4.0M | \$ 1.8M |
| MEDIUM 100-500 | 13,700 | 237 | 75 | 7.0 | 31,800 | 64,900 | 20.7 | 18.6 | 205 |
| LARGE >500 | 28,700 | 606 | 80 | 8.1 | 48,000 | 57,200 | 40.1 | 45.2 | 900 |
| TOTAL | 15,500 | 272 | 74% | 7.2 | 33,000 | \$ 55,300 | \$ 22.7M | \$ 21.1M | \$ 11.7M |

NUMBER OF RESPONDENTS = 76(100%)

- Eighty-seven percent have a formal planning process, 76% in data processing.

2. GROWTH HISTORY AND FORECAST

- Over the six year period from 1970 to 1976, the number of hospitals and the number of beds have remained level. However, over the same period of time hospital expenses increased at a compound rate of over 13% per year. This substantial inflation is a major factor in driving up health care costs. A great deal of attention and effort is focused on "cost containment" programs in the hospital industry.
- The growth in use of automation in hospitals will come from expanded market penetration rather than from growth in overall expenditures. Automation in the patient management area and transfer of existing batch applications to on-line delivery modes will provide the growth.
- INPUT estimates that the growth in computer equipment and services will be around 16% per year; which is equal to the AAGR for total computer services.

B. USE OF COMPUTER EQUIPMENT AND SERVICES

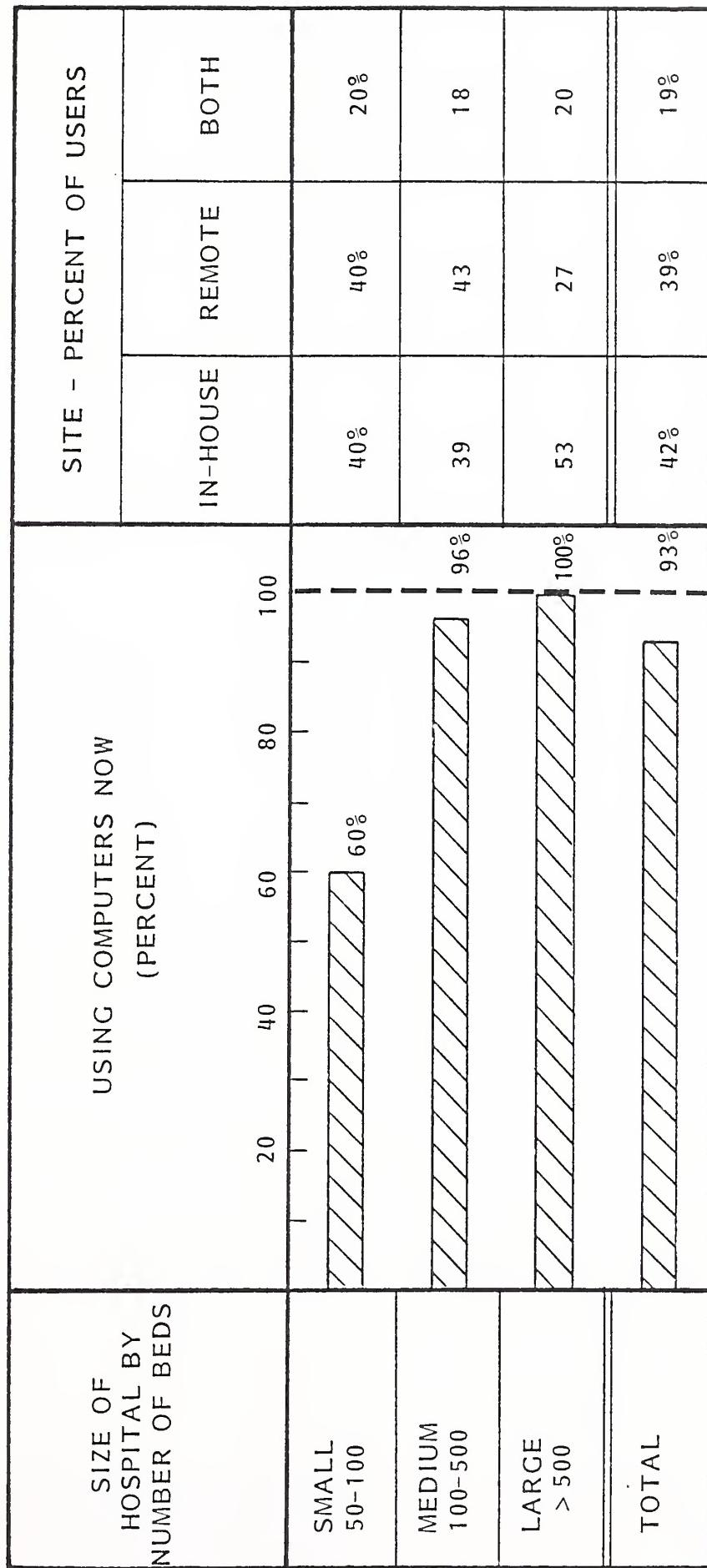
I. DEGREE OF COMPUTER AUTOMATION

a. Present Use Of Computer Automation

- Use of computers in hospitals is almost universal, 93% of all hospitals interviewed are presently involved (see Exhibit IV-2). Automation of the business office functions started in the mid sixties and is now an essential tool for almost all hospitals. Even 60% of the small hospitals of less than 100 beds interviewed are using computers.

EXHIBIT IV-2

PRESENT USERS OF COMPUTER EQUIPMENT AND SERVICES
 PERCENT
 (HOSPITALS)



NUMBER OF RESPONDENTS = 76(100%)

- Choice of in-house systems or remote services are almost equally divided among all groups. The 76 respondent hospitals reported 46 in-house computer installations and 44 remote service contracts.
- The 15 large hospitals of over 500 beds interviewed reported 11 in-house installations and 7 remote service contracts, a more decided preference for in-house computer installations.

b. Level Of User Satisfaction

- The general level of satisfaction with in-house computer systems is shown on Exhibit IV-3.
 - Ratings are on a scale 1 to 5, and 68% of all hospitals rated the in-house systems either 4 or 5 indicating a high degree of user satisfaction.
- The general level of user satisfaction with remote computer services is shown on Exhibit IV-4.
 - The level of satisfaction with remote computer services is less than for in-house systems. Fifty-nine percent of all groups rated the service 4 or 5 on the scale indicating a substantial level of dissatisfaction.
 - This is particularly true for small hospitals where only 33% rated the service 4 or 5 on the scale.
- Almost all of the hospitals that are not presently using computers had plans to do so in the future.

c. Vendors

- Equipment vendors mentioned by respondents are shown in Exhibit IV-5. IBM is the most frequently mentioned vendor (24% of all mentions). IBM has been

EXHIBIT IV-3

GENERAL LEVEL OF SATISFACTION WITH
IN HOUSE COMPUTER SYSTEMS
(HOSPITALS)

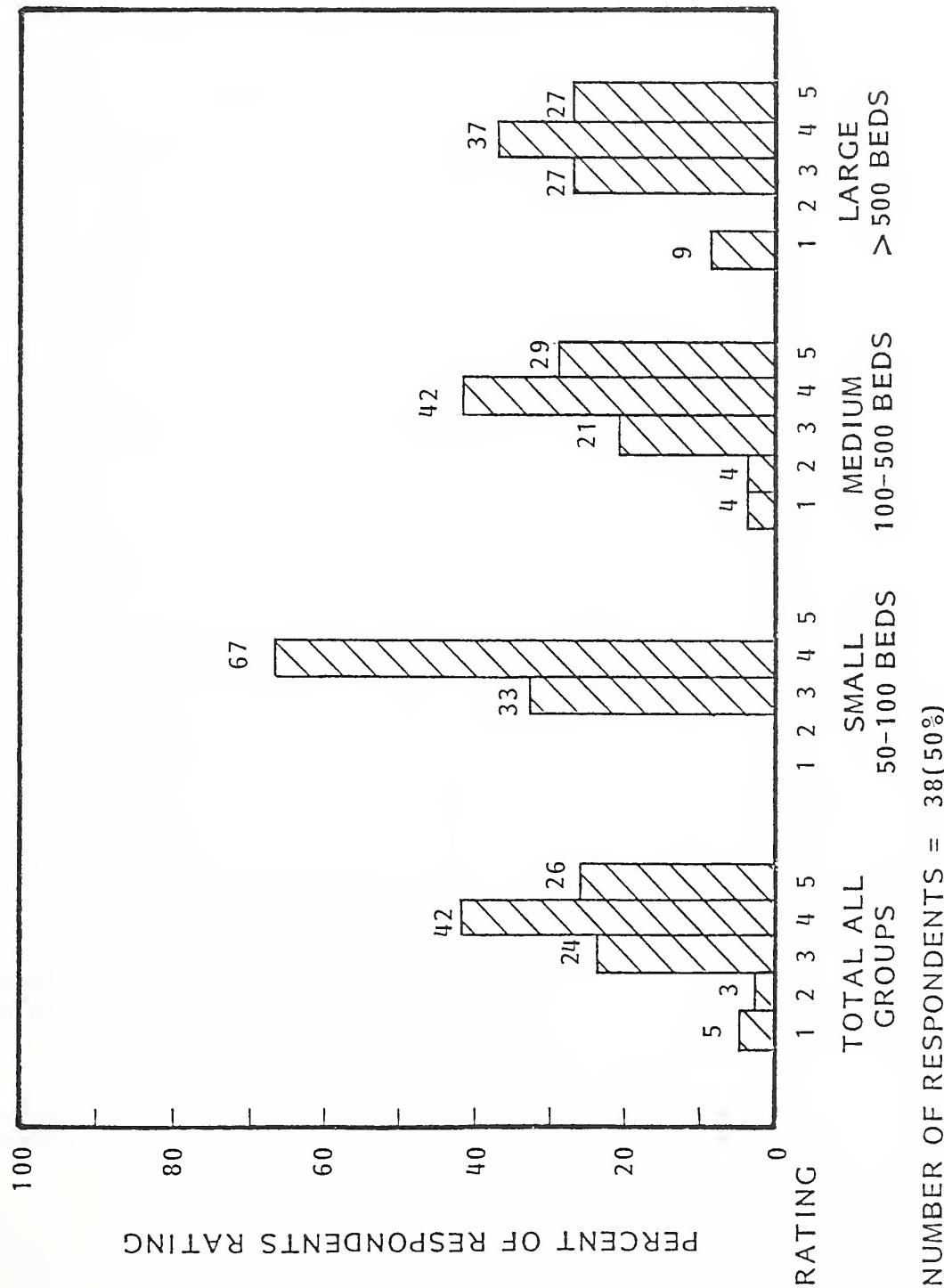


EXHIBIT IV-4

GENERAL LEVEL OF SATISFACTION
WITH REMOTE COMPUTER SERVICES
(HOSPITALS)

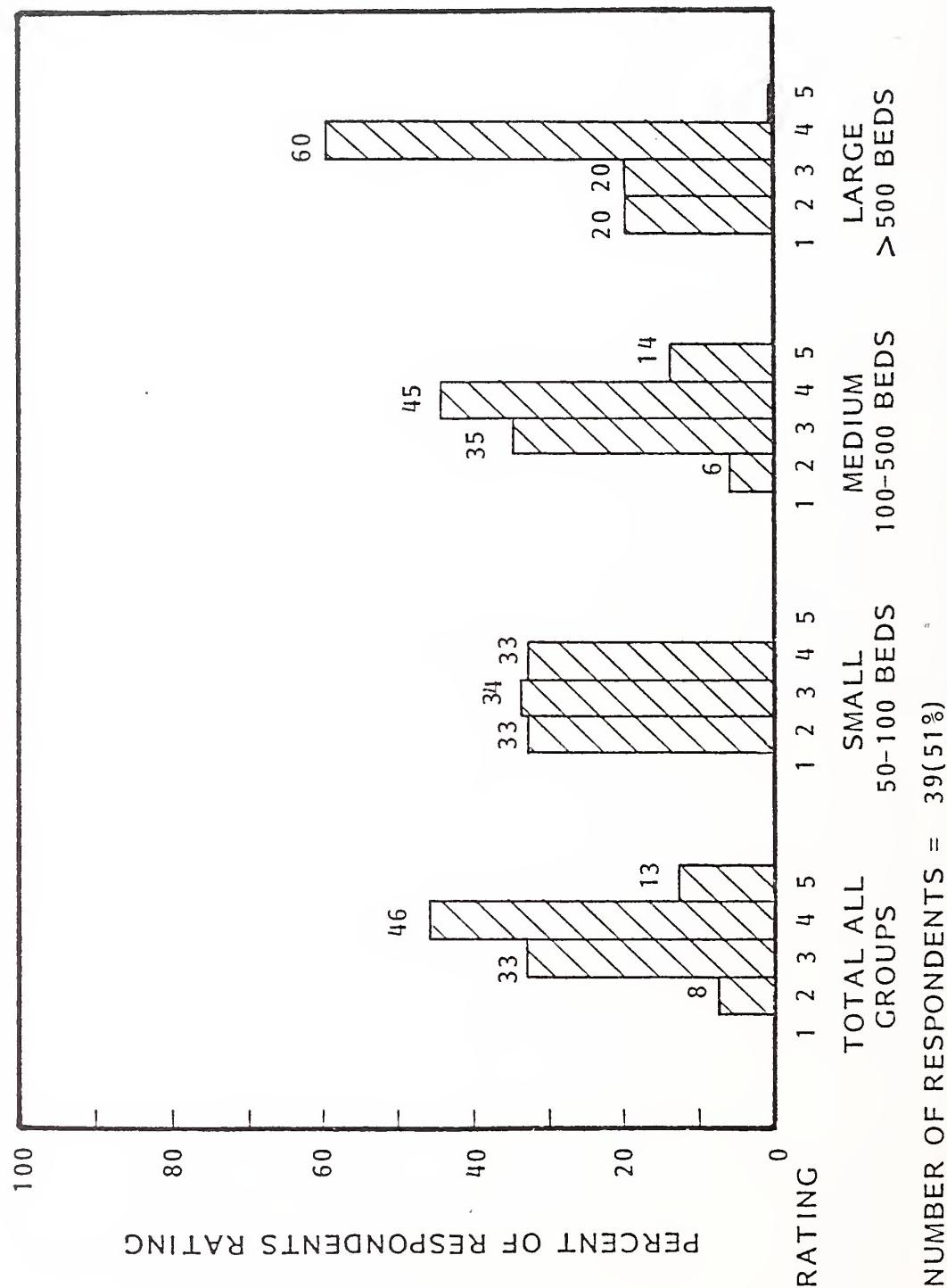


EXHIBIT IV-5

EQUIPMENT VENDORS MENTIONED BY RESPONDENTS
(HOSPITALS)

| VENDOR | NUMBER OF MENTIONS |
|------------------------------|--------------------|
| • IBM | 10 |
| • FOUR PHASE | 7 |
| • DEC | 6 |
| • BURROUGHS | 5 |
| • HONEYWELL | 4 |
| • NCR | 1 |
| • HEWLETT-PACKARD | 1 |
| • UNIVAC | 1 |
| • OTHER MINICOMPUTER VENDORS | 6 |
| TOTAL | 41 |

a dominant factor in developing the market, starting with their Shared Hospital Accounting System (SHAS) software package. Four other equipment vendors had multiple mentions: Four Phase, DEC, Burroughs and Honeywell.

- The major equipment vendors have a well established position in the hospital data processing market.
- Source of the software is shown on Exhibit IV-6.
 - Small hospitals are dependent on software companies and consultants for software.
 - Many large hospitals (56%) have an in-house software development capability with help from software companies and equipment vendors.
- Remote computing service and turnkey systems vendors are listed on Exhibit IV-7.
 - SMS is clearly the dominant service vendor for business office services, followed by McAuto. Neither of these vendors have moved substantially beyond the business office.
 - Technicon, Medicus, and HBO have all extended well into patient management and Technicon and Medicus into medical applications.
 - For further discussion see Appendix D - Related INPUT Reports.
- d. Current Expenditures
 - Annual EDP expenditures for in-house systems and for remote computing services are reported in Exhibit IV-8 and IV-9.
 - These relatively large expenditures for data processing reflect the high utilization of computers by the hospital industry for business applica-

EXHIBIT IV-6

SOURCE OF THE SOFTWARE
PERCENT
(HOSPITALS)

| SIZE BY NUMBER OF BEDS | IN-HOUSE | SOFTWARE COMPANY | INDUSTRY STANDARD PROGRAMS | CONSULTANTS | EQUIPMENT VENDOR |
|------------------------|----------|------------------|----------------------------|-------------|------------------|
| SMALL 50-100 | 25% | 25% | - | 50% | - |
| MEDIUM 100-500 | 35 | 13 | 4 | 11 | 37 |
| LARGE >500 | 56 | 17 | - | 5 | 22 |
| TOTAL | 40% | 15% | 3% | 12% | 30% |

NUMBER OF RESPONDENTS = 68(89%)

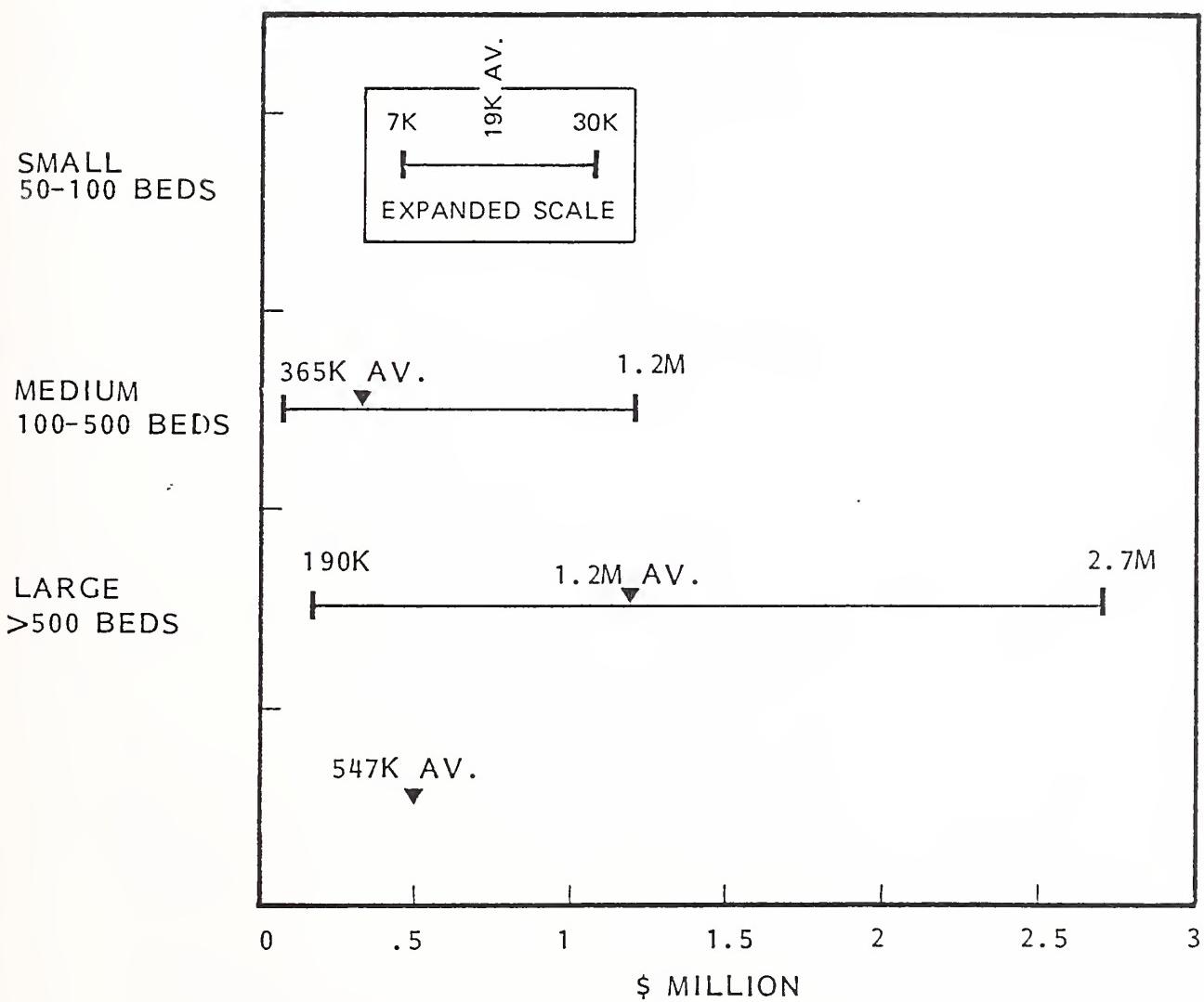
EXHIBIT IV-7

REMOTE COMPUTING SERVICE AND TURNKEY SYSTEMS
VENDORS MENTIONED BY RESPONDENTS
(HOSPITALS)

| VENDOR | NUMBER OF MENTIONS |
|--------------------|---------------------|
| ● SMS | 10 |
| ● MCAUTO | 5 |
| ● TECHNICON | 5 |
| ● MEDICUS | 2 |
| ● HBO | 1 |
| ● RELIGIOUS ORDERS | 1 EACH, 8 ORDERS |
| ● HUMANA | 1 |
| ● UNIVAC | 1 |
| ● ADP | 1 |
| ● ITEL | 1 |
| ● TYMSHARE | 1 |
| ● PENTAMATION | 1 |
| TOTAL | 37 |

EXHIBIT IV-8

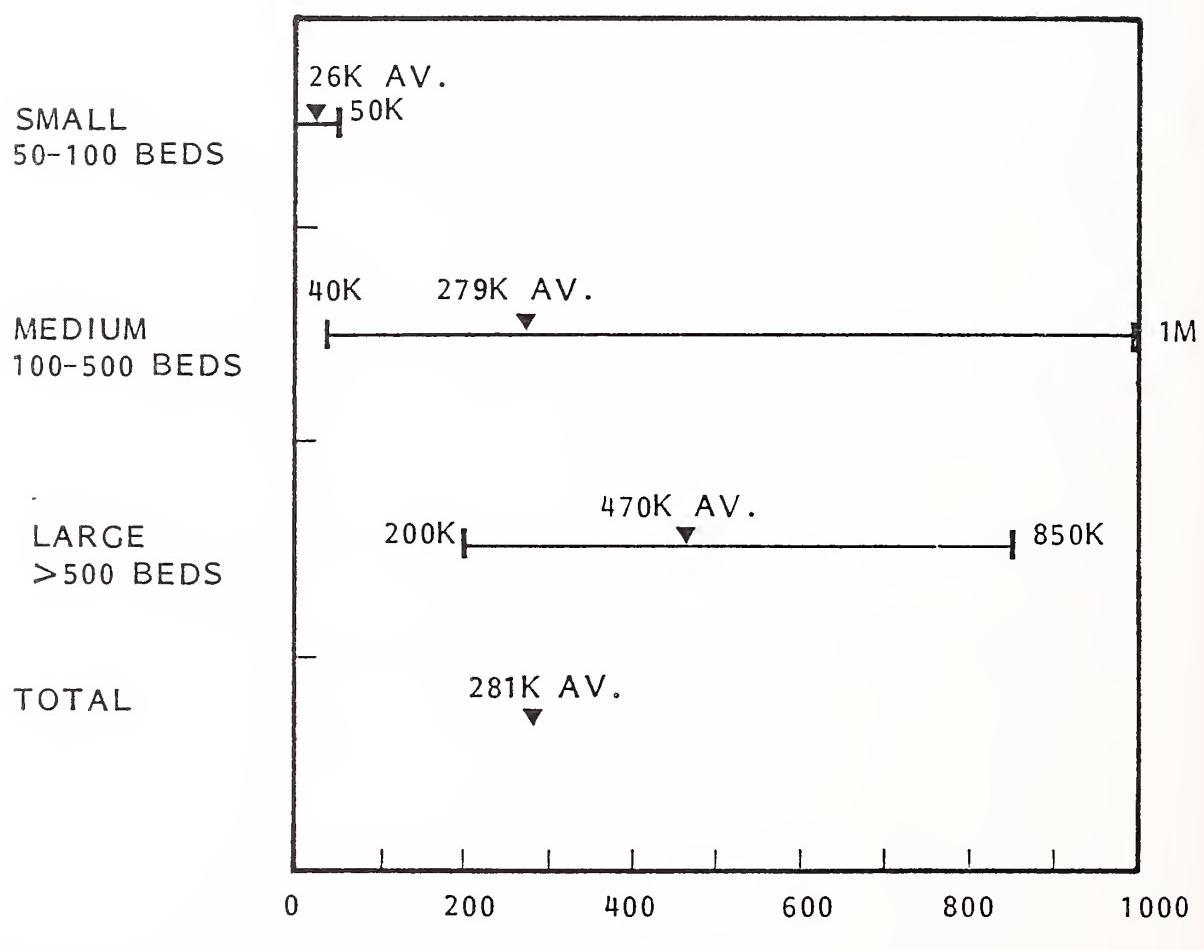
ANNUAL EDP EXPENDITURES
IN HOUSE SYSTEMS
RANGE AND AVERAGE (▼)
(HOSPITALS)



NUMBER OF RESPONDENTS = 31(70%)

EXHIBIT IV-9

ANNUAL EDP EXPENDITURES -
REMOTE COMPUTING SERVICES



NUMBER OF RESPONDENTS = 27(66%)

tions. Expenditures will continue to grow as applications are expanded into patient management and medical areas.

- On the average, remote computing services for medium size hospitals have a 30% cost advantage over in-house systems.
- The size of the data processing staff was reported by 89% of the hospitals interviewed. The average size of DP staff by size of hospital is as follows:

| | |
|---------------|------------|
| Small | 4 persons |
| 50-100 beds | |
| Medium | 9 persons |
| 100-500 | |
| Large | 27 persons |
| over 500 beds | |
| All hospitals | 12 persons |

2. APPLICATION ANALYSIS

a. Functional Use Of Computer Equipment And Services

- Although 93% of all hospitals are using computers now, applications are mostly limited to financial and administrative functions, with patient management and professional services applications just beginning to appear. INPUT estimates the present market penetration to be 30%.
- Functions now automated by percent of hospitals automated are reported in Exhibit IV-10.
 - Financial applications are already well automated, particularly the large paper volume functions, patient billing (99%) and accounts receivable (97%).

EXHIBIT IV-10

FUNCTIONS NOW AUTOMATED BY
PERCENT OF HOSPITALS AUTOMATED
(HOSPITALS)

| SIZE BY NUMBER OF BEDS | NUMBER IN SAMPLE | NUMBER AUTOMATED | PATIENT BILLING | ACCOUNTS RECEIVABLE | INSURANCE CLAIMS | GENERAL LEDGER | INVENTORY | PATIENT RECORDS | REGISTRATION | PATIENT | LAB REPORTING | PHARMACY | RADIODILOGY | ORDER ENTRY | PROFESSIONAL EDUCATION | PATIENT EDUCATION | RESEARCH | PATIENT MANAGEMENT | | | FINANCIAL APPLICATIONS | | | PROFESSIONAL SERVICES | | | |
|---------------------------------|------------------|------------------|-----------------|---------------------|------------------|----------------|-----------|-----------------|--------------|---------|---------------|----------|-------------|-------------|---------------------------|----------------------|----------|--------------------|-------------------|---------------|------------------------|-----------------|-------------------|--------------------------|-------|-----------------|-------------------|
| | | | | | | | | | | | | | | | | | | SMALL 50-100 | MEDIUM 100-500 | LARGE >500 | TOTAL | SMALL 50-100 | MEDIUM 100-500 | LARGE >500 | TOTAL | SMALL 50-100 | MEDIUM 100-500 |
| SMALL 50-100 | 8 | 5 | 80% | 100% | 60% | 80% | 60% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MEDIUM 100-500 | 53 | 51 | 100 | 96 | 88 | 96 | 94 | 59 | 59 | 55 | 18 | 33 | 16 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LARGE >500 | 15 | 15 | 100 | 93 | 100 | 100 | 60 | 80 | 27 | 60 | 53 | 27 | 27 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| TOTAL | 76 | 71 | 99% | 97% | 87% | 96% | 93% | 55% | 59% | 45% | 25% | 35% | 17% | 16% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% |

- The first patient management functions to be automated are patient registration and patient records. However, the largest potential for computer automation is in capturing order entry directly at the necessary stations and tying it on-line to all ancillary departments. These applications are just beginning.
- Professional services applications are not yet evident.

b. Reasons For Automating

- The dominant reason hospitals have automated the financial applications are cost and cash flow.

- Reasons given for automating as a percent of responses are:

| | <u>Percent</u> |
|---------------------------|----------------|
| Cost and cash flow | 56 |
| Quality control | 15 |
| Improved schedules | 14 |
| Better management control | 12 |
| Systems improvement | 3 |

- Reasons expressed for dissatisfaction with present automation are:

| | <u>Percent</u> |
|----------------------|----------------|
| Maintaining control | 40 |
| Reliable performance | 27 |
| Timeliness | 13 |
| Cost | 12 |
| Other | 8 |

c. Level Of User Satisfaction

- Level of user satisfaction for present automation of financial applications is qualified, only 60% of the ratings were in the two highest categories, 4 and 5.

C. COMPUTER EQUIPMENT AND SERVICES MARKET

- I. USER FUTURE PLANS AND REASONS FOR FURTHER AUTOMATION
- Present user's plans to further automate within the next two years are shown in Exhibit IV-11.
 - Eighty-five percent of the hospitals now using computers plan to expand their data processing applications within the next two years.
 - It is significant, and a clear indication of an emerging market, that 30% of present users plan to automate order entry within the next two years; similarly lab reporting (45%), pharmacy (38%), and radiology (35%).

EXHIBIT IV-11

PRESENT USERS' PLANS TO FURTHER AUTOMATE WITHIN THE NEXT TWO YEARS
(HOSPITALS)

| SIZE BY NUMBER OF BEDS | NUMBER NOW USING COMPUTERS | PLAN TO FURTHER AUTOMATE (%) | OF THOSE PLANNING FURTHER AUTOMATION - % BY APPLICATION | | | |
|---------------------------------|-------------------------------|---------------------------------|---|---------------------------------|-------------------|-----------------|
| | | | FINANCIAL APPLICATIONS | PATIENT MANAGEMENT APPLICATIONS | RADIOLOGY | ORDER ENTRY |
| SMALL 50-100 | 5 | 100% | 40% 20% | 0 60% | 0 20% | 0 20% |
| MEDIUM 100-500 | 51 | 82 | 33 60 | 43 36 | 41 50 | 41 57 |
| LARGE >500 | 15 | 87 | 15 15 | 31 15 | 39 15 | 39 15 |
| TOTAL | 71 | 85% | 30% 33% 35% | 22% 33% 37% | 38% 45% 38% | 23 31 30% |

- Of these hospitals not presently automated, 80% plan to automate in the next two years.

2. SIZE OF PRESENT MARKET AND MARKET FORECAST

- The market data for computer equipment and services shown on Exhibit IV-12 are average annual expenditure for data processing, the number of hospitals, and present market penetration (see Appendix B - Market Forecast Data).
- AAGR is estimated to be 16%.
- The present market for computer equipment and services in hospitals is estimated to be \$313 million and is expected to grow to \$619 million in five years.

D. FINANCIAL SERVICES MARKET

I. PATIENT ACCOUNTING AND COLLECTIONS

a. Billing And Collection

- How all hospitals accomplish patient insurance coverage verification is reported on Exhibit IV-13.
 - Verification of Medicare and Medicaid insurance coverage is mostly accomplished by accepting the card as evidence.
 - In addition to accepting Blue Cross cards as verification, there also is a substantial number of hospitals verifying directly by computer.
 - The largest amount of manual verification is for commercial insurance companies.

EXHIBIT IV-12

FORECAST OF USER EXPENDITURES FOR
 COMPUTER EQUIPMENT AND SERVICES FOR HOSPITALS
 (1979 - 1984)
 (HOSPITALS)

| SIZE BY NUMBER OF BEDS | EXPENDITURES | |
|---------------------------------|----------------------|----------------------|
| | 1979 (\$ MILLION) | 1984 (\$ MILLION) |
| SMALL 50-100 | \$ 26 | \$ 51 |
| MEDIUM 100-500 | 225 | 445 |
| LARGE >500 | 62 | 123 |
| TOTAL | \$313 | \$619 |

AAGR = 15%

EXHIBIT IV-13

PATIENT INSURANCE COVERAGE VERIFICATION-TOTAL FOR ALL HOSPITALS
(HOSPITALS)

| THIRD PARTY PAyer | CARD ACCEPTED AS EVIDENCE (PERCENT) | | | DIRECT BY COMPUTER (PERCENT) | | | MANUALLY (PERCENT) | | |
|-------------------------|---|-----|-----|------------------------------------|----|----|-----------------------|-----|-----|
| | I | O | ER | I | O | ER | I | O | ER |
| MEDICARE | 67% | 74% | 81% | 16% | 9% | 6% | 17% | 17% | 13% |
| MEDICAID | 75 | 80 | 89 | 7 | 2 | 0 | 18 | 18 | 11 |
| BLUE CROSS | 51 | 59 | 79 | 32 | 18 | 12 | 17 | 23 | 9 |
| COMMERCIAL INSURANCE | 46% | 59% | 71% | 2% | 0% | 2% | 52% | 41% | 27% |

NUMBER OF RESPONSES = 60(79%)

I = INPATIENT
 O = OUTPATIENT
 ER = EMERGENCY ROOM

- Percent of hospital billing prepared directly by computer is shown in Exhibit IV-14.

- Percent of computer prepared billings are:

| <u>Hospital Size</u> | <u>Percent</u> |
|------------------------|----------------|
| Small 50-100 beds | 0-25 |
| Medium 100-500 beds | 50-73 |
| Large Over 500 beds | 83-92 |
| Total | 52-73 |

- The highest percent (73%) of computer prepared billing is for Medicare.
- Percent of total billing represented by each payer is shown in Exhibit IV-15.
 - Among the hospitals interviewed, Medicare was the largest third party payer.
- b. Accounts Receivable
- The average age of accounts receivable by size of hospital is:

EXHIBIT IV-14

PERCENT OF BILLING PREPARED BY COMPUTER DIRECTLY
(HOSPITALS)

| SIZE BY NUMBER OF BEDS | MEDICARE | MEDICAID | BLUE CROSS | COMMERCIAL | PATIENT | ALL PAYERS |
|------------------------|----------|----------|------------|------------|---------|------------|
| SMALL 50-100 | 25% | 0 | 25% | 13% | 0 | 13% |
| MEDIUM 100-500 | 73 | 52 | 68 | 50 | 70 | 63 |
| LARGE > 500 | 92 | 85 | 85 | 83 | 91 | 89 |
| TOTAL | 73% | 52% | 68% | 52% | 66% | 62% |

NUMBER OF RESPONDENTS = 45(59%)

EXHIBIT IV-15

PERCENT OF TOTAL BILLING
REPRESENTED BY EACH PAYER
(HOSPITALS)

| SIZE BY NUMBER OF BEDS | MEDICARE | MEDICAID | BLUE CROSS | COMMERCIAL | PATIENT |
|------------------------|----------|----------|------------|------------|---------|
| SMALL 50-100 | 39% | 9% | 22% | 22% | 8% |
| MEDIUM 100-500 | 36 | 9 | 19 | 25 | 11 |
| LARGE >500 | 42 | 10 | 19 | 22 | 7 |
| TOTAL | 39% | 9% | 20% | 24% | 8% |

NUMBER OF RESPONDENTS = 45(59%)

| <u>Hospital Size</u> | <u>Average Age (Days)</u> |
|----------------------|---------------------------|
| Small | 72 |
| 50-100 beds | . |
| Medium | 60 |
| 100-500 beds | . |
| Large | 62 |
| Over 500 beds | . |
| Total | 61 |

- Total amounts of outstanding receivables by age are shown on Exhibit IV-16.
 - The total amount of receivables over 60 days old for medium and large size hospitals equals \$6.2 billion; \$4.6 billion for medium and \$1.7 billion for large.
 - All hospitals are experiencing a difficult problem in collecting accounts receivable. Computer based collection systems that are effective in advancing collections would result in large improvements in cash flow, and consequently would be cost effective.
- The average for all respondents concerning when an overdue bill is considered to be bad debt is 120 days.
- When routine methods of collection have been exhausted the actions taken are as follows (average for all hospitals):

EXHIBIT IV-16

TOTAL AMOUNTS OF OUTSTANDING RECEIVABLES BY AGE
AVERAGE PER HOSPITAL

| SIZE BY NUMBER OF BEDS | IN-HOUSE UNBILLED (\$ MILLION) | UNDER 30 DAYS (\$ MILLION) | 30-60 DAYS (\$ MILLION) | 60-90 DAYS (\$ MILLION) | OVER 90 DAYS (\$ MILLION) | TOTAL OUT-STANDING (\$ MILLION) |
|------------------------|--------------------------------|----------------------------|-------------------------|-------------------------|---------------------------|---------------------------------|
| SMALL 50-100 | - | - | - | - | - | - |
| MEDIUM 100-500 | 0.73 | 1.46 | 0.65 | 0.67 | 0.99 | 4.41 |
| LARGE >500 | 4.20 | 5.20 | 4.70 | 2.00 | 3.50 | 19.60 |

NUMBER OF RESPONDENTS:

SMALL = 0

MEDIUM = 18(34%)

LARGE = 2(15%)

- Collection is in-house only 10%
- Immediately turn accounts over to outside collection agency 25%
- First try to collect in-house and then turn over to outside collection agency 65%

c. Present Use Of Credit Cards

- Credit cards are broadly accepted by hospitals, but account for a very small percentage of collections. Percent of bills paid by credit card or cash are shown on Exhibit IV-17.
 - Seventy-eight percent of hospitals accept credit cards.
 - Credit cards account for only 1.6% of collections and are used mainly for out-patient services.
 - Payment by cash is more prevalent, accounting for 3.7% of collections.
- Of those hospitals accepting credit cards, the type of card by percent of mentions are as follows:

| <u>Card</u> | <u>Percent</u> |
|------------------|----------------|
| VISA | 92 |
| Master Charge | 90 |
| American Express | 17 |
| Regional | 9 |

EXHIBIT IV-17

PERCENT OF BILLS PAID
BY CREDIT CARD OR CASH
(HOSPITALS)

| SIZE BY NUMBER OF BEDS | RESPONDENTS ACCEPTING CREDIT CARDS | PAID BY CREDIT CARD | PAID BY CASH |
|------------------------|------------------------------------|---------------------|--------------|
| SMALL 50-100 | 63% | 0.7% | 4.8% |
| MEDIUM 100-500 | 76 | 1.5 | 3.6 |
| LARGE > 500 | 93 | 2.1 | 3.3 |
| TOTAL | 78% | 1.6% | 3.7% |

2. ASSESSMENT OF THE MEDICAL CREDIT CARD CONCEPT

a. Rating

- Every effort was made to insure an accurate and in-depth rating of the proposed medical credit card system (Medicard). Seventy out of 76 respondents (92%) rated Medicard. First, an overall rating of the card was made, and then each individual feature was rated.
- The wording of the question as it appeared in the questionnaire is as follows:
 - I would like to briefly explain a new proposed medical credit card system and get your reaction to the overall concept and then to the attractiveness of the individual features. The novel card system would have the following features:
 - Include identification and current health insurance coverage as part of the card.
 - Emergency medical data; i.e., blood type, allergies.
 - Provide a personal credit line in addition to insurance.
 - Produce all insurance claims and file and collect them for you.
 - Provide guarantee of payment of claims.
 - Produce and collect patient bills, guaranteeing the patient bill to you.
 - Please rate the attractiveness of the individual features.
 - Identification.
 - Verify health insurance coverage.

- Provide emergency medical data.
 - Produce, file, and collect insurance claims.
 - Provide guarantee of payment of claims.
 - Produce, collect, and guarantee patient bills.
- Ratings are on a scale of 1 to 5. Results of the rating are shown on Exhibit IV-18 through IV-24. The graphic presentation in these exhibits is the best way to review the results. However, as a simple measure, rating of over 50% for the total of 4 and 5 ratings is positive.
- A summary of the ratings follow.
 - Overall, Exhibit IV-18:

Percent Rated 4 to 5

| | |
|--------|----|
| Total | 65 |
| Small | 50 |
| Medium | 64 |
| Large | 79 |

This is a positive response and it reconciles with the impressions obtained in the on-site interviews. It is apparent however, that the larger the hospital the more positive is the rating. The rating by small hospitals of 50-100 beds is marginal.

- Identification, Exhibit IV-19.

EXHIBIT IV-18

OVERALL RATING OF PROPOSED MEDICAL CREDIT CARD SYSTEM
(HOSPITALS)

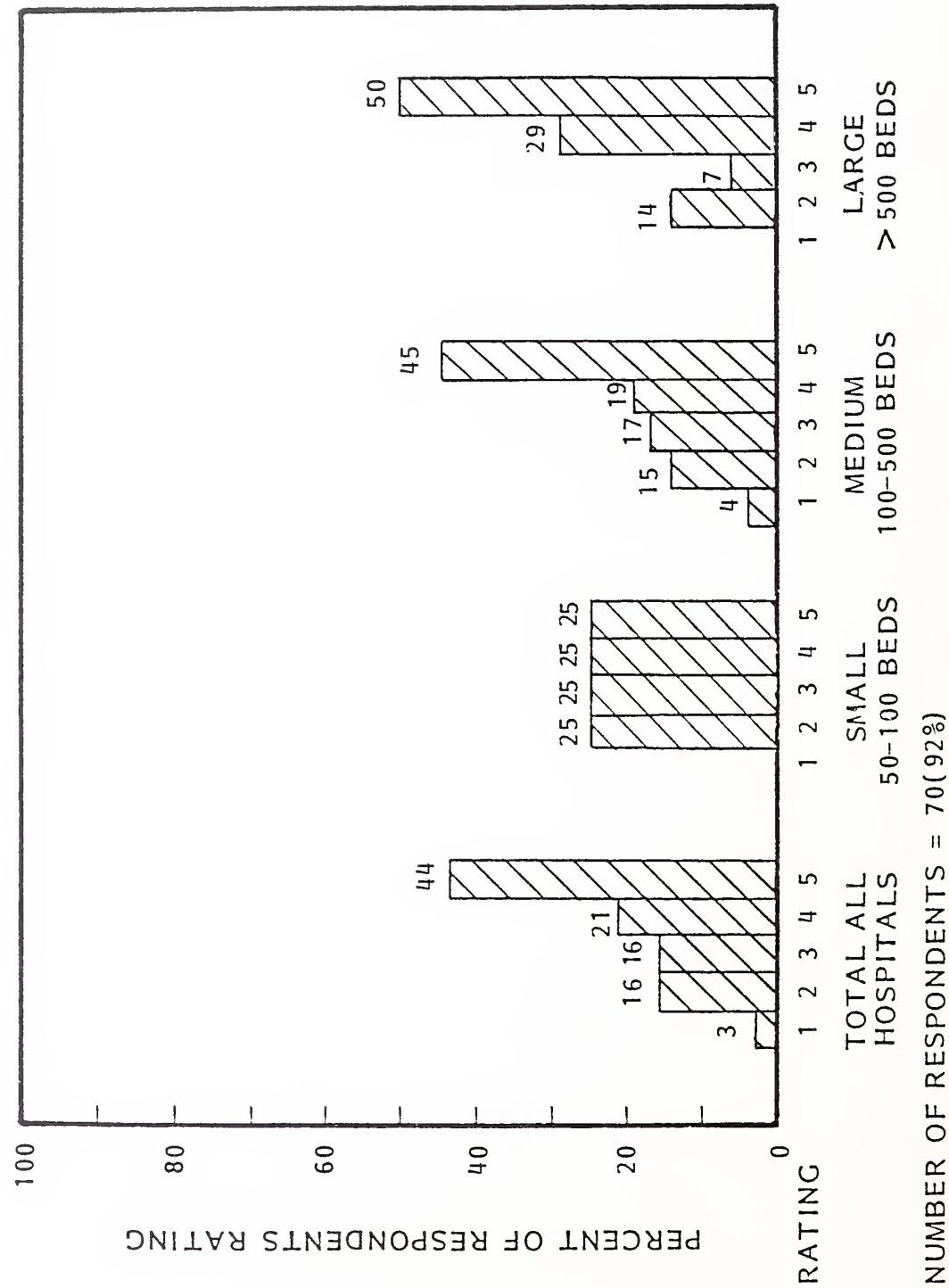


EXHIBIT IV-19

RATING OF IDENTIFICATION FEATURE OF
PROPOSED MEDICAL CREDIT CARD SYSTEM
(HOSPITALS)

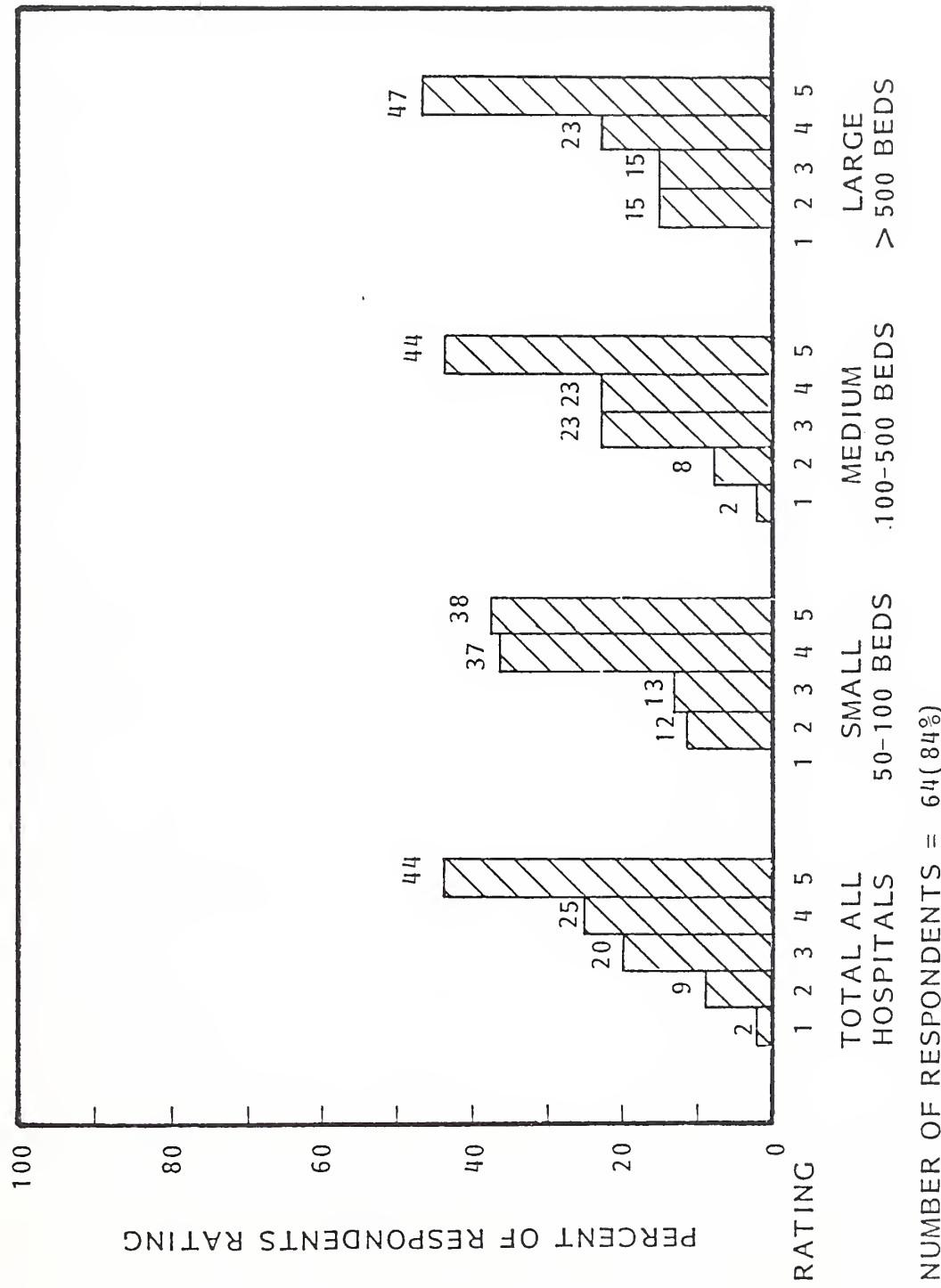


EXHIBIT IV-20

RATING OF VERIFICATION OF HEALTH INSURANCE FEATURE OF
PROPOSED MEDICAL CREDIT CARD SYSTEM
(HOSPITALS)

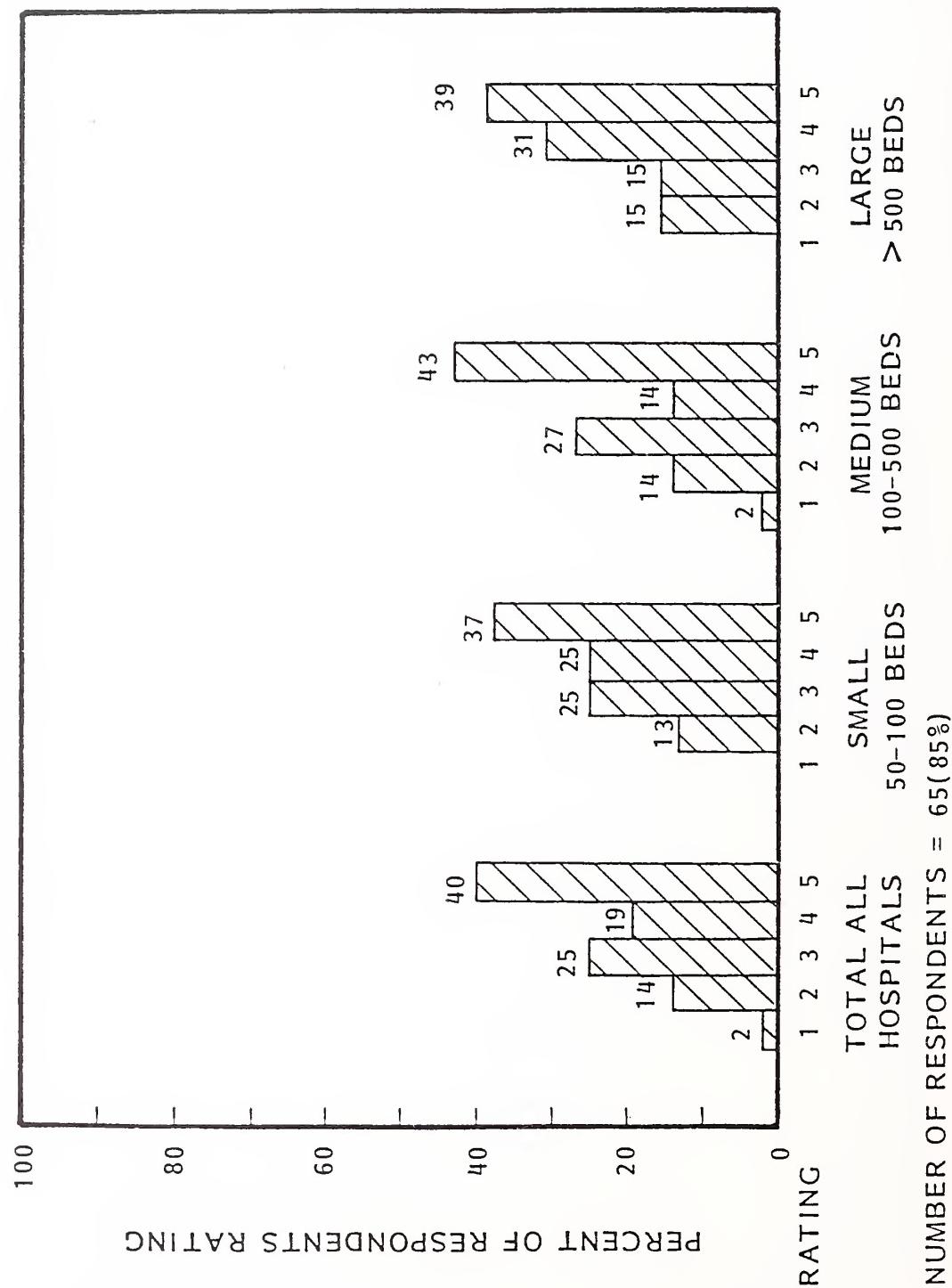


EXHIBIT IV-21

RATING OF EMERGENCY MEDICAL DATA FEATURE OF
PROPOSED MEDICAL CREDIT CARD SYSTEM
(HOSPITALS)

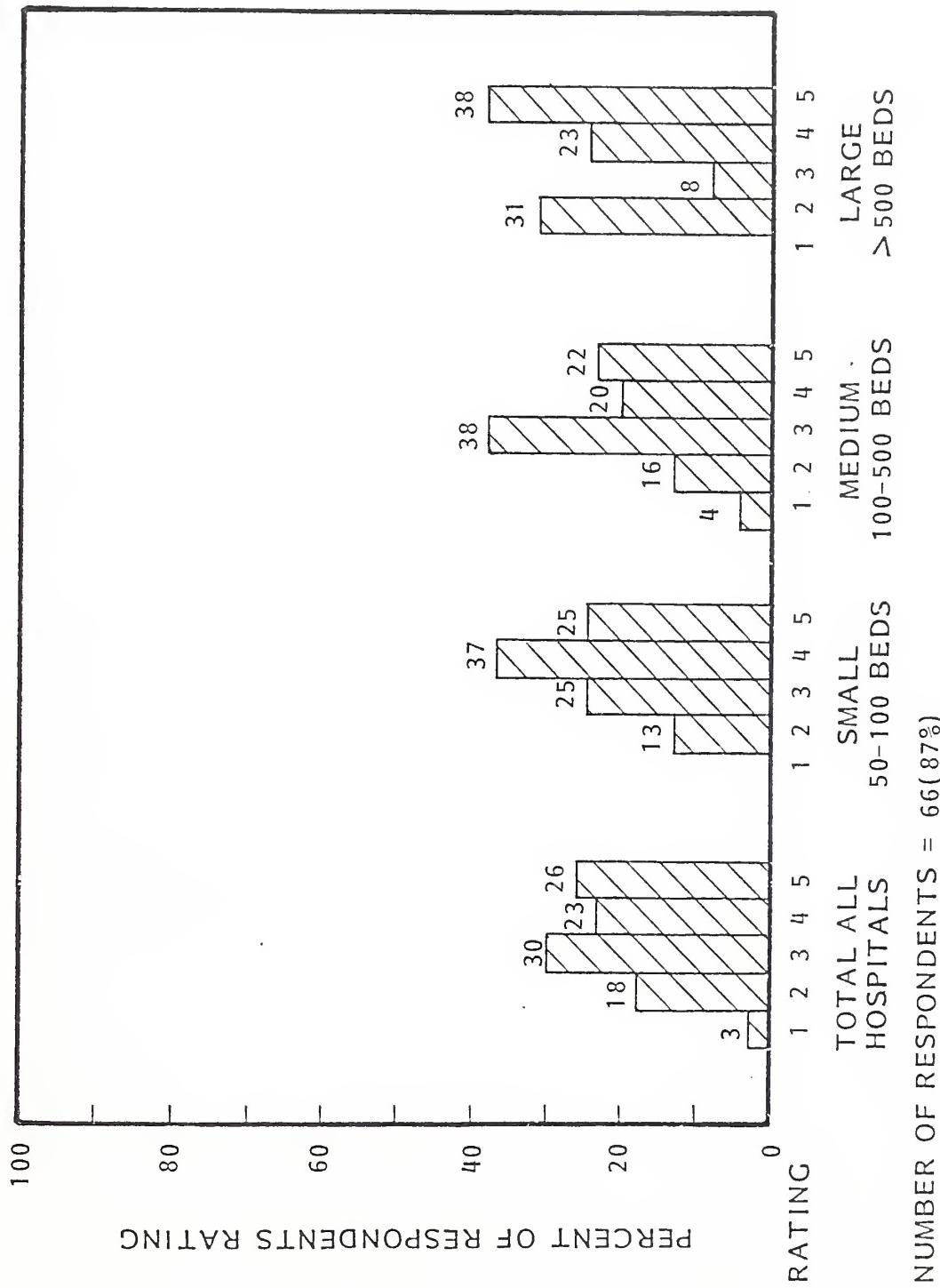


EXHIBIT IV-22

RATING OF FILING AND COLLECTING INSURANCE CLAIMS
FEATURE OF PROPOSED MEDICAL CREDIT CARD SYSTEM
(HOSPITALS)

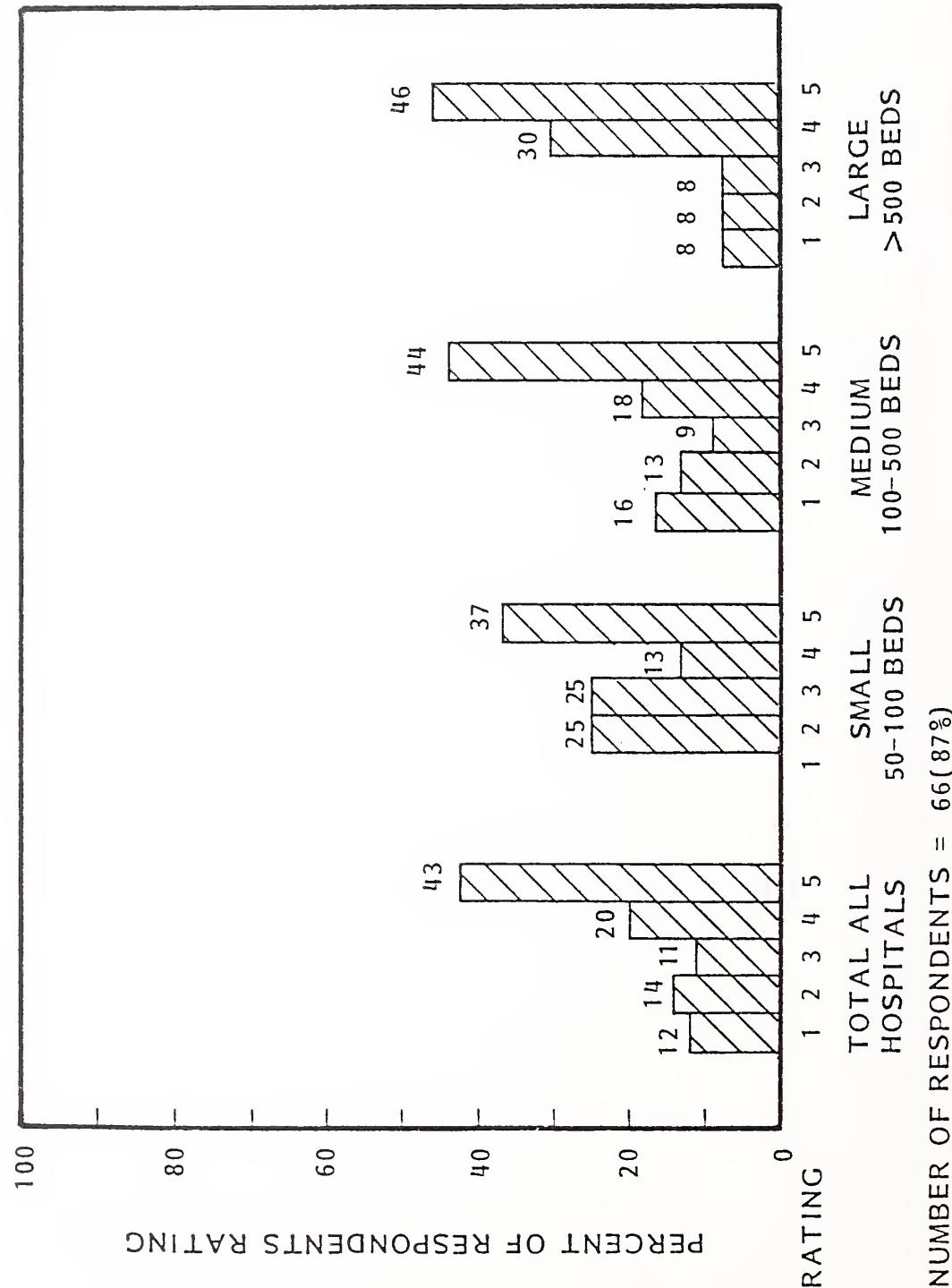


EXHIBIT IV-23

RATING OF GUARANTEE OF PAYMENT OF INSURANCE CLAIMS FEATURE
OF PROPOSED MEDICAL CREDIT CARD SYSTEM
(HOSPITALS)

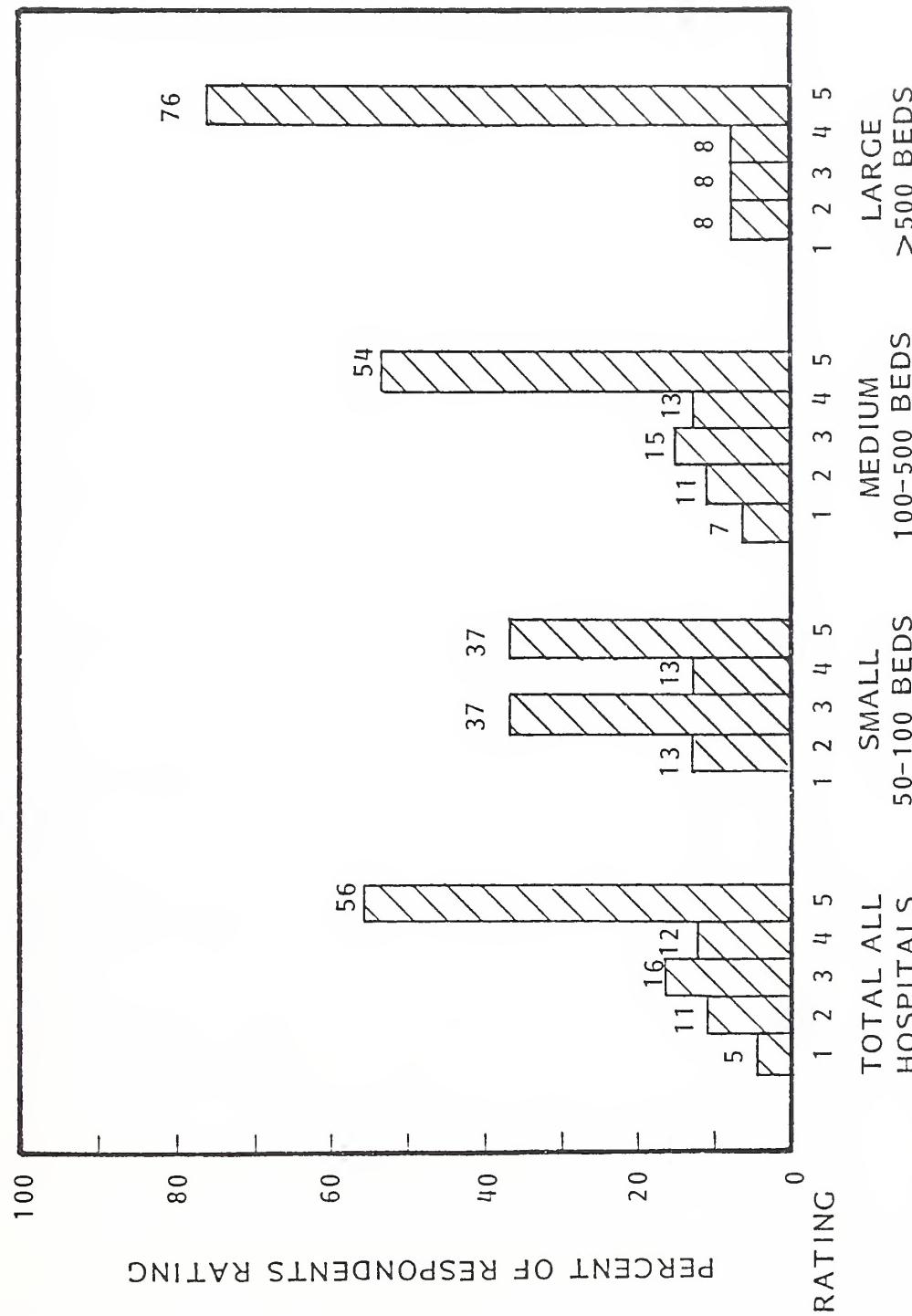
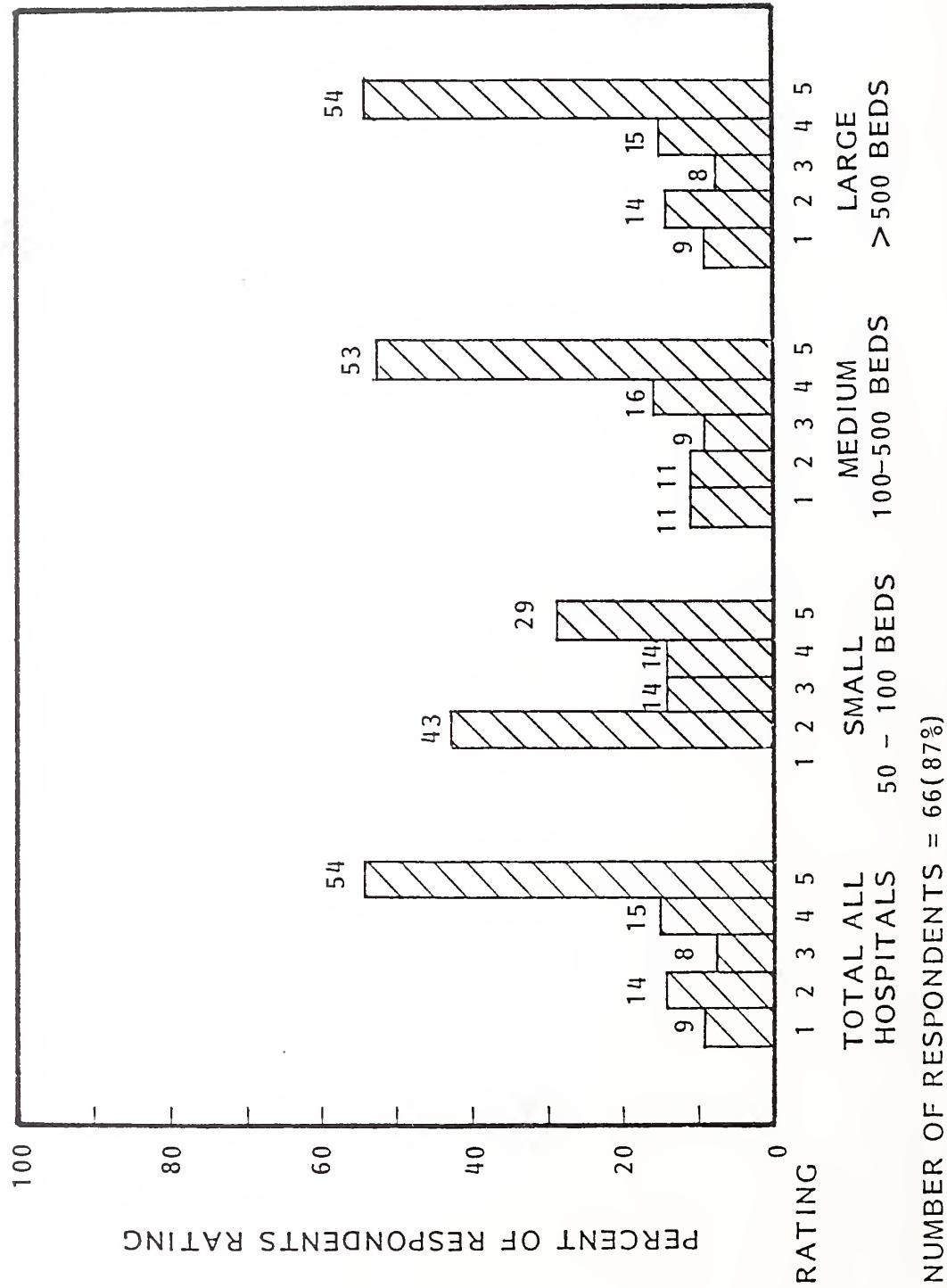


EXHIBIT IV-24

RATING OF GUARANTEE OF PAYMENT AND COLLECTING PATIENT BILLS
FEATURE OF PROPOSED MEDICAL CREDIT CARD SYSTEM
(HOSPITALS)



Percent Rated 4 to 5

| | |
|--------|----|
| Total | 69 |
| Small | 75 |
| Medium | 67 |
| Large | 70 |

All of the hospitals found the identification feature of the card attractive, but were generally skeptical about keeping the data current.

- Verification of insurance, Exhibit IV-20.

Percent Rated 4 to 5

| | |
|--------|----|
| Total | 59 |
| Small | 62 |
| Medium | 57 |
| Large | 70 |

A high rating, particularly among the large hospitals, verification is an important feature of the card.

- Emergency medical data, Exhibit IV-21.

Percent Rated 4 to 5

| | |
|--------|----|
| Total | 49 |
| Small | 62 |
| Medium | 44 |
| Large | 61 |

A low rating, generally physicians felt that they would not rely on the coding because of the difficulty of keeping it current and the importance of it in an emergency. INPUT recommends that this feature be dropped from the card.

- Collecting insurance claims, Exhibit IV-22.

Percent Rating 4 to 5

| | |
|--------|----|
| Total | 63 |
| Small | 50 |
| Medium | 62 |
| Large | 76 |

Although the small hospitals of 50-100 beds rated this feature marginally, the larger hospitals find it to be one of the most important features of the card systems. Impressions gained from the on-site interviews also support this conclusion.

- Guarantee of payment of insurance claims, Exhibit IV-23.

Percent Rating 4 to 5

| | |
|--------|----|
| Total | 68 |
| Small | 50 |
| Medium | 67 |
| Large | 84 |

Although marginally rated by small hospitals guarantee of payment of insurance claims is an attractive feature of the card system and is of importance in selling hospitals on using the card system.

- Guarantee of payment of patient bills, Exhibit IV-24.

Percent Rating 4 to 5

| | |
|--------|----|
| Total | 69 |
| Small | 43 |
| Medium | 69 |
| Large | 69 |

Guarantee of payment of patient bills is an important feature, but is of less importance to the large hospitals than guarantee of payment of insurance claim.

b. User Perceptions And Comments

- After completing the ratings of the proposed medical credit card system, respondents were asked to elaborate on their assessment of the card. Typical remarks are shown on Exhibit IV-25.

EXHIBIT IV-25

TYPICAL REMARKS BY RESPONDENTS CONCERNING
THE PROPOSED MEDICAL CARD SYSTEM
(HOSPITALS)

- "SOUNDS TERRIFIC BUT ALSO SOUNDS LIKE NATIONAL HEALTH INSURANCE."
- "SUCCESS DEPENDS ON HOW MUCH THE CARD IS PRESENTED IN THE AREA."
- "BIG THING IS TO SELL IT TO THE PUBLIC."
- "DEPENDS ON TESTED ACCEPTANCE - MEDICARE SOUNDED GOOD IN 1956."
- "THE GUARANTEE IS THE KICKER."
- "IF RECEIVABLES COULD BE REDUCED TO LESS THAN THIRTY DAYS, THEN IT WOULD BE EFFECTIVE."
- "IT WOULD BE WORTH 1% OF TOTAL OUTSTANDING RECEIVABLES - MAYBE MORE."
- "I WOULD PAY 3% OF RECEIVABLES."
- "IDENTIFICATION IS GOOD - BUT NOT IF SOME DO NOT HAVE THE CARD."

- Respondents were also asked what they did not like about the card. Typical remarks are shown in Exhibit IV-26.

c. Overall Assessment Of The Medicard Concept

- With the exception of small 50 to 100 bed hospitals, all hospitals reaction to the proposed medical credit card system is clearly very favorable, in many instances even enthusiastic.
- The proposal is regarded by most as being extremely ambitious, and properly so. This leads to widespread skepticism about the vendors' ability to successfully implement the system and keep it current with the myriad of required changes of information.
- There is concern over losing control over patient billing, the financial backbone of the hospital. If they give it up to an outside organization, and it fails, they are in severe financial difficulty.
- It will be difficult at best to sell the service without demonstrating its successful use by a sample community. Nobody wants to be first in such a revolutionary change.
- The overwhelming attraction of the proposed system is the great financial advantage associated with advancing the cash flow. Internal cost savings are attractive as well but are smaller in magnitude.
- Eliminating the problems involving third party payers and governmental regulation is also very attractive.
- To sum up, the proposed card system concept is highly regarded by a majority of potential users and the market for the services is real and unpenetrated.

EXHIBIT IV-26

TYPICAL REMARKS BY RESPONDENTS EXPRESSING
WHAT THEY DON'T LIKE ABOUT THE CARD
(HOSPITALS)

- "IF ONLY GOOD RISKS COULD GET THE CARD, THEN IT WOULD NOT BE WORTH THE 2-3% COST."
- "3% TAKE IS TOO HIGH."
- "WOULD NOT LIKE TO LOSE CONTROL OF BILLING - HOSPITAL WOULD HAVE NO RECORDS."
- "P.R. PROBLEMS - WOULD NOT LIKE FOR PATIENTS TO GO ELSEWHERE BECAUSE CARD COMPANY LEANED ON THEM."
- "ALREADY GUARANTEED 90+% OF BILLINGS."
- "PROBLEMS OF KEEPING THE COSTS UP TO DATE."
- "TOO CLOSE TO NATIONAL HEALTH INSURANCE."
- "THE PROBLEMS WOULD NOT GET A CARD SO GUARANTEES ARE MEANINGLESS."
- "IN COUNTY HOSPITALS THE CONCEPT WOULD NEVER GET BY THE BOARD OF SUPERVISORS."

3. MARKET POTENTIAL OF MEDICARD SYSTEM

- At 3% of total revenue as a charge for the system, the potential market for the medicard system is estimated to be \$2.3 billion, Exhibit IV-27. This figure is for the card system alone and does not include any allowance for the computer services or for other financial services.

4. USE OF FINANCIAL SERVICES

- Eighty-eight percent of all hospitals are using financial services now. All of the large hospitals of over 500 beds interviewed are using financial services. Use of financial services is shown on Exhibit IV-28.
 - The largest percentage use was co-op buying (70%).
 - Percentage use of financial services in descending order are:

| <u>Services</u> | <u>Percent</u> |
|--------------------|----------------|
| Co-op buying | 70 |
| Equipment leasing | 57 |
| Construction loans | 36 |
| Investment | 33 |
| Cash management | 27 |
| Mortgage bonds | 24 |
| Mortgages | 21 |

- Eighty-six percent of all hospital users of financial services interviewed rated the level of satisfaction 4 or 5.

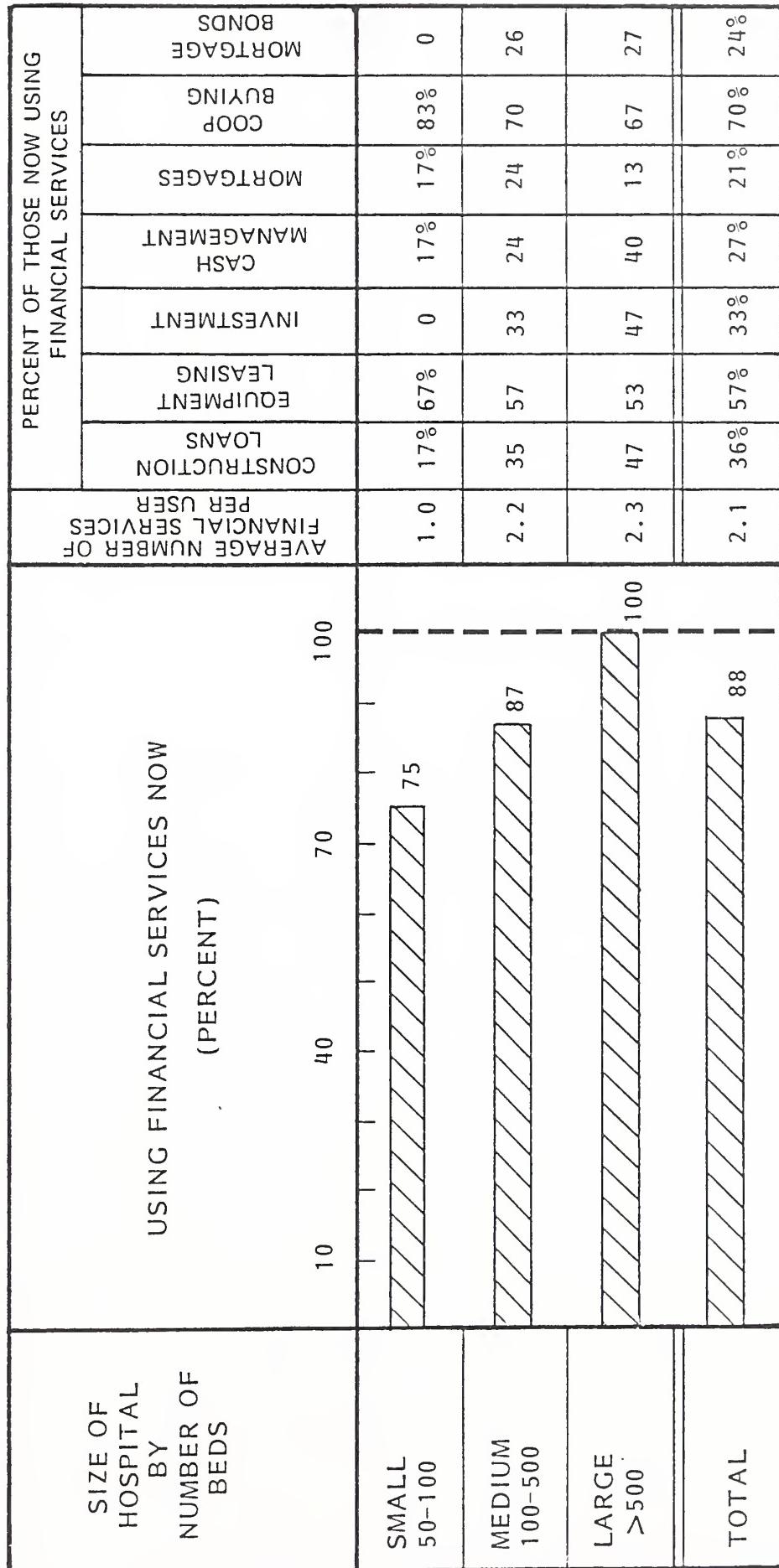
EXHIBIT IV-27

POTENTIAL MARKET FOR PROPOSED
 MEDICAL CREDIT CARD SYSTEM
 FOR HOSPITALS
 (HOSPITALS)

| SIZE BY NUMBER OF BEDS | AVERAGE ANNUAL REVENUE PER HOSPITAL (\$ MILLION) | NUMBER OF HOSPITALS | TOTAL ANNUAL REVENUES (\$ BILLION) | POTENTIAL MARKET - 3% OF REVENUE (\$ MILLION) |
|------------------------|--|---------------------|------------------------------------|---|
| SMALL 50-100 | \$ 5 | 1,467 | \$ 7 | \$ 210 |
| MEDIUM 100-500 | 21 | 2,700 | 57 | 1,710 |
| LARGE >500 | 40 | 306 | 12 | 360 |
| TOTAL | - | 4,473 | \$ 76 | \$ 2,280 |

ASSUMED CHARGE = 3% OF COLLECTIONS

EXHIBIT IV-28

USE OF FINANCIAL SERVICES
(HOSPITALS)

- There is no significant use of factoring or borrowing against receivables.
- A significant number of those using financial services now expressed a desire to make a change to another service (over 25%). This was particularly so in:

| | <u>Percent</u> |
|-----------------|----------------|
| Co-op buying | 33 |
| Cash management | 33 |
| Investment | 33 |

E. INDUSTRY ISSUES

- State and Federal government regulations, both present and proposed, are of great concern to the hospital industry and will have an effect on the industry's use of computers. A discussion of the issues is contained in a related INPUT report, Computer Services Markets in Hospitals (October 1978), Appendix D.
- The Federal government (HEW) is seeking to impose on hospitals a uniform reporting system, System For Hospital Uniform Reporting (SHUR).
 - When implemented, SHUR would force hospitals to make major revisions to their current financial applications programs.
 - A 600 page revised SHUR manual was published in the Federal Register in January, 1979. It immediately drew opposition from the American Hospital Association and the Hospital Financial Management Association. There were replies from 4,000 hospitals. Another revision is expected about October 1, 1979.

- The most basic point at issue covers a provision that redefines Medicare reimbursement rates.
 - Implementation costs are estimated by HEW to be \$66 million, and by AHA to be \$100 million. In any event, if SHUR is imposed, it will force very large changes on hospitals and vendors.
- The Hospital Cost Containment Act of 1977 is still in committee. If passed it would limit even further the funds that acute care hospitals could spend for new capital improvements, including computer systems.
 - The bill is very controversial and is being actively opposed by the hospital industry on the grounds that it is inequitable.
 - Additional cost justification documents would impose additional work load on the EDP departments.
 - Privacy of patient information is of concern to the industry.
 - Although there is no current federal or state legislation that will affect the handling of patient medical information, if it comes, there would be an impact on the computer systems.

EXHIBIT A-1

INTERVIEW SAMPLE -
 MEDICAL AND DENTAL OFFICES
 (GROUPS)

| TYPE OF PRACTICE | NEW YORK | ILLINOIS | FLORIDA | TEXAS | CALIFORNIA | OTHER | TOTAL |
|-----------------------------|----------|----------|---------|-------|------------|-------|-------|
| MD GROUP PRACTICES | | | | | | | |
| • SMALL (3-6 MDs) | 5 | 5 | 5 | 5 | 5 | 5 | 30 |
| • MEDIUM (7-19 MDs) | 2 | 2 | 2 | 2 | 2 | - | 10 |
| • LARGE (20 OR MORE MDs) | 2 | 2 | 2 | 2 | 2 | - | 10 |
| TOTAL GROUP PRACTICES | 9 | 9 | 9 | 9 | 9 | 5 | 50 |
| SOLO/CO-LOCATED MDS | 8 | 8 | 8 | 8 | 8 | 10 | 50 |
| DENTAL GROUPS | 8 | 8 | 8 | 8 | 8 | 10 | 50 |
| TOTAL ALL GROUPS | 25 | 25 | 25 | 25 | 25 | 25 | 150 |

EXHIBIT A-2

INTERVIEW SAMPLE
HOSPITALS
(GROUP)

| BED SIZE | NEW YORK | ILLINOIS | FLORIDA | TEXAS | CALIFORNIA | OTHER | TOTAL |
|---------------------|----------|----------|---------|-------|------------|-------|-------|
| • SMALL 50-100 | 1 | 1 | | 1 | 1 | 2 | 8 |
| • MEDIUM 100-500 | 9 | 9 | 7 | 8 | 9 | 11 | 53 |
| • LARGE >500 | 1 | 2 | 4 | 4 | 2 | 2 | 15 |
| TOTAL TELEPHONE* | 6 | 7 | 8 | 8 | 8 | 15 | 52 |
| TOTAL ON-SITE* | 5 | 5 | 4 | 5 | 5 | - | 24 |
| TOTAL INTERVIEWS | 11 | 12 | 12 | 12 | 13 | 15 | 76 |

NOTE:

* EACH PHONE INTERVIEW WITH TWO INDIVIDUALS
* EACH ON-SITE INTERVIEW WITH THREE INDIVIDUALS

APPENDIX B: MARKET FORECAST DATA

A. MARKET POTENTIAL AND CURRENT EXPENDITURES

I. NATIONAL STATISTICS

- National statistics for physicians and dentists are shown in Exhibit B-I.

2. MARKET POTENTIAL PHYSICIANS AND DENTISTS

- Assumptions:

- Present market penetration is 10%.
- Fifty percent of solo physicians and dentists are co-located.
- Expenditures for computer equipment and services for physicians and dental group practices are 1.75% of total revenues.
- Expenditures for computer equipment and services for solo co-located physicians and dentists are 1% of total revenues.
- Average annual growth rate is 24%.

- Physicians in group practice:

EXHIBIT B-1

PHYSICIANS AND DENTISTS
NATIONAL STATISTICS

| SOLO | | GROUPS | | TOTALS | | AVERAGE REVENUE PER PROFESSIONAL (\$000) | | AVERAGE NUMBER PER GROUP | |
|---------------|----------------|---------------|----------------|---------------|----------------|--|---------|--------------------------|---|
| PROFESSIONALS | ESTABLISHMENTS | PROFESSIONALS | ESTABLISHMENTS | PROFESSIONALS | ESTABLISHMENTS | NET | SUPPORT | TOTAL | |
| 139,016 | 111,004 | 75,694 35% | 10,167 8% | 214,710 | 121,171 | 65,000 | 35,000 | 110,000 | 7 |
| PHYSICIANS | DENTISTS | | | | | | | | |
| 97,923 | 73,900 | 13,255 12% | 2,459 3% | 111,178 | 76,359 | 57,000 | 34,000 | 91,000 | 5 |

AVERAGE: 1 MD OR 1 DDS EMPLOYS 2 SUPPORT PERSONNEL

PRIMARY SOURCE: COUNTY BUSINESS PATTERNS. U.S. BUREAU OF THE CENSUS.

- No. 75,694 x Annual Revenues \$110,000 x % of Expenditures 1.75% = \$150 million per year market potential.
 - Estimated market potential = 10%.
 - Current expenditures for EDP = \$15 million per year.
- Co-located solo physicians:
 - No. 139,016 x Annual Revenues \$110,000 x % of Expenditures 1% x 50% are co-located = \$76 million per year market potential.
 - Estimated market penetration = 10%.
 - Current expenditures for EDP = \$7 million per year.
 - Cross check:
 - . \$18,000 per year/group x 10,167 group = \$180 million per year market potential. Compares to \$150 million per year arrived at by the first method.
 - Dental groups:
 - Dental group practices:
 - . No. 13,255 x Annual Revenues \$91,000 x % of Expenditures 1.75% = \$21 million per year market potential.
 - Solo co-located dentists:
 - . No. 97,923 x Annual Revenues \$91,000 x % of Expenditures 1% x 50% are co-located = \$45 million per year potential

- . Total dental groups = \$66 million per year market potential.
- . Estimated market penetration = 10%.
- . Current expenditures for EDP = \$7 million per year.

3. MARKET POTENTIAL HOSPITALS

| <u>No. Of Hospitals</u> | <u>Size</u> | <u>Avg. Annual Expense \$ Million</u> | <u>Total Annual Expense \$ Billion</u> |
|-------------------------|-------------|---------------------------------------|--|
| 1,467 | Small | \$ 4.0 | \$ 5.9 |
| 2,700 | Medium | 18.6 | 50.2 |
| 306 | Large | 45.2 | 13.8 |
| TOTAL | 4,473 | - | \$69.9 |

- Potential EDP market at 1.5% of total expense:

| <u>Size Hospital</u> | <u>Potential EDP Market \$ Million</u> | <u>Present Expenditures For EDP At 30% Penetration \$ Million</u> |
|----------------------|--|---|
| Small | \$ 88 | \$ 26 |
| Medium | 753 | 225 |
| Large | 207 | 62 |
| TOTAL | \$1,048 | \$313 |

- Cross Check:

| <u>No. Of Hospitals</u> | <u>Size</u> | <u>Avg. EDP Expenditures</u> | <u>EDP Potential Market \$ Million</u> |
|-------------------------|-------------|----------------------------------|--|
| 1,467 | Small | \$ 26,000 | \$ 38 |
| 2,700 | Medium | 279,000 | 753 |
| 306 | Large | 420,000 | 144 |
| TOTAL | 4,473 | - | \$935 |

SHORT TERM HOSPITALS
GENERAL MEDICAL AND SURGICAL

1. Do you employ:

- () In House EDP
() Remote Computing Services
() Both

2. Installed equipment (If applicable).

| EQUIPMENT | VENDOR | MODEL |
|-------------------------|--------|-------|
| Large Computer | | |
| Small Business Computer | | |
| Minicomputer(s) | | |

3. What is the source of your software?

- () Written Outside Industry () By
In House Software Co. Standard Consultants
Programs () Equipment vendor

Names of vendors: _____

Level of satisfaction on a scale of 1-5 (5 is high).

4. Remote Computing Service (If applicable):

Name(s) of Service Vendor:

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5. Expenditures. How much do you spend annually on EDP?

- In House \$ per mo. per yr.
 Outside Services \$ per mo. per yr.

Are These:

- Direct Costs Only

Include Fringe Benefits and Overhead Allocations Also:

6. Staff. How large is your EDP staff? (If applicable).

No. of personnel ?

SECTION III. Applications (If not automated, ask future plans on III-2).

1. Degree of automation. Check (✓)

| APPLICATION | CHECK (✓) FUNCTIONS NOW AUTOMATED | LOCATION OF SERVICE | | LARGE COMPUTER | | SMALL COMPUTER | |
|--|---|---------------------|--------------------|----------------|---------|----------------|-------------|
| | | IN HOUSE | OUTSIDE SERVICE | BATCH | ON LINE | STAND ALONE | DISTRIBUTED |
| MANAGEMENT, ACCOUNTING, AND FINANCIAL | | | | | | | |
| Patient Billing | | | | | | | |
| Accounts Receivable | | | | | | | |
| Insurance Claims | | | | | | | |
| Personnel, Payroll | | | | | | | |
| General Ledger . | | | | | | | |
| Inventory | | | | | | | |
| Other | | | | | | | |
| PATIENT MANAGEMENT | | | | | | | |
| Patient Registration & Scheduling | | | | | | | |
| Patient records, Storage And Retrieval | | | | | | | |
| Laboratory Reporting | | | | | | | |
| Radiology | | | | | | | |
| Other | | | | | | | |

SECTION III. Applications (Cont'd)

1. Degree of automation. Check (/)

| APPLICATION | CHECK (/) FUNCTIONS NOW AUTOMATED | LOCATION OF SERVICE | | LARGE COMPUTER | | SMALL COMPUTER | |
|------------------------|---|---------------------|--------------------|----------------|---------|----------------|-------------|
| | | IN HOUSE | OUTSIDE SERVICE | BATCH | ON LINE | STAND ALONE | DISTRIBUTED |
| PROFESSIONAL SERVICES | | | | | | | |
| Professional Education | | | | | | | |
| Patient Education | | | | | | | |
| Research | | | | | | | |
| Other | | | | | | | |

SECTION III: Applications (If not automated, ask future plans)

2. Degree of satisfaction and reasons for automating. (Check (✓) or use CODE on following page).

| APPLICATION | (FROM III-1) CHECK (✓) FUNCTIONS NOW AUTOMATED | LEVEL OF USER SATISFACTION FOR AUTOMATED FUNCTIONS SCALE (1-5) | REASONS FOR AUTOMATING (CODE) | PLAN TO AUTOMATE OR FURTHER AUTOMATE NEXT 2 YEARS CHECK (✓) | REASONS FOR PLANNED EXPANSION (CODE) |
|--|---|--|-------------------------------------|--|---|
| | | | | MANAGEMENT, ACCOUNTING, AND FINANCIAL. | |
| Patient Billing | | | | | |
| Accounts Receivable | | | | | |
| Insurance Claims | | | | | |
| Personnel, Payroll | | | | | |
| General Ledger | | | | | |
| Inventory | | | | | |
| Other | | | | | |
| PATIENT MANAGEMENT | | | | | |
| Patient Registration & Scheduling | | | | | |
| Patient records, Storage And Retrieval | | | | | |
| Laboratory Reporting | | | | | |
| Radiology | | | | | |
| Other | | | | | |

SECTION III: Applications (Cont'd)

2. Degree of satisfaction and reasons for automating (Check (✓) or use CODE on following page).

| APPLICATION | CHECK (✓) FUNCTIONS NOW AUTOMATED | LEVEL OF USER SATISFACTION FOR AUTOMATED FUNCTIONS SCALE (1-5) | REASONS FOR AUTOMATING (CODE) | PLAN TO AUTOMATE OR FURTHER AUTOMATE NEXT 2 YEARS CHECK (✓) | REASONS FOR PLANNED EXPANSION (CODE) |
|---------------------------------|---|--|-------------------------------------|--|---|
| | | | | PROFESSIONAL SERVICES | |
| Professional Education | | | | | |
| Patient Education | | | | | |
| Research | | | | | |
| Personal Financial Records | | | | | |
| Investment & Portfolio Analysis | | | | | |
| Other | | | | | |

3. CODE: (NOTE: Do not read this list to person being interviewed, use list to generally code response).

REASONS FOR AUTOMATING AND FOR PLANNED EXPANSION - CODE FOR III-1.

A. Cost:

1. The cost of performing function itself is too high.
2. There are lost opportunities for increasing revenue/decreasing overall costs.

B. Time:

1. The elapsed time to perform the function is too great.
2. Too much staff time is being spent in performing the function.

C. Performance Quality:

1. There are too many errors.
2. Users are dissatisfied with the range and depth of features.
3. The function itself is not fully integrated.
4. This function should be integrated with other functions

D. Control and Information:

1. There is a lack of sufficient management control and/or information.
2. There is a lack of sufficient operational control and/or information.

E. Other:

Describe:

1. _____
2. _____
3. _____
4. _____

4. To sum up, briefly, what are the basic problems and issues of concern to you?

PHYSICIANS AND DENTISTS

SECTION I: Group Description

1. How many people work in your group?

MDs _____

DDSs _____

Lab technicians _____

Lab technicians _____

Nurses _____

Dental assistants _____

Clerical/administrative _____

Hygenists _____

Total: _____

Clerical/administrative _____

Total: _____

2. How many patients are seen per day? _____

3. Is your group: What number of hospitals are you
affiliated with? _____ General Practice Multispecialty Specialized

If so, what specialty? _____

4. Is your facility:

 Owned Rented LeasedSECTION II: Use of Computer Equipment And Services

1. Does your group use computers now?

 Yes NoIf No, why aren't you? _____
_____If No, skip to Section III

INPUT

2. Do you employ:

- () In house EDP
 () Remote Computing Services
 () Both

3. Do you utilize any hospital data processing facilities?

- () Yes () No

4. Please rate your general level of satisfaction with your EDP operation on a scale of 1-5. (5 is high).

() In House _____ () Outside Service _____
 Comments: _____

5. Installed equipment (If applicable).

| EQUIPMENT | VENDOR | MODEL | WHEN INSTALLED |
|-------------------------|--------|-------|----------------|
| Large Computer | | | |
| Small Business Computer | | | |
| Minicomputer(s) | | | |

6. What is the source of your software?

- () Written () Outside () Industry () By Consultants
 In House Software Co. Standard Programs () Equipment Vendor

Name(s) of vendor(s):

7. Remote Computing Service (if applicable):

Name(s) of Service Vendor:

8. Mode of Operation

| TYPE | BATCH | INTERACTIVE (ON-LINE) |
|--------------------------|-------|-----------------------|
| Installed Equipment | | |
| Remote Computer Services | | |

9. Expendidures. How much do you spend annually on EDP?

() In House \$ _____ per mo. () per yr. ()

() Outside Services \$ _____ per mo. () per yr. ()

10. Staff. How large is your EDP staff? (If applicable)

No. of personnel _____

(NOTE: Do not read this list to person being
SECTION III: Applications interviewed, use list to generally code response).

REASONS FOR AUTOMATING AND FOR PLANNED EXPANSION - CODE FOR III-1.

A. Cost:

1. The cost of performing function itself is too high.
2. There are lost opportunities for increasing revenue/decreasing overall costs.

B. Time:

1. The elapsed time to perform the function is too great.
2. Too much staff time is being spent in performing the function.

C. Performance Quality:

1. There are too many errors.
2. Users are dissatisfied with the range and depth of features.
3. The function itself is not fully integrated.
4. This function should be integrated with other functions.

D. Control and Information:

1. There is a lack of sufficient management control and/or information.
2. There is a lack of sufficient operational control and/or information.

E. Other:

Describe:

1. _____ ..
2. _____ ..
3. _____ ..
4. _____ ..

SECTION III: Applications (If not automated, ask future plans)

1. Degree of Automation (Check or use CODE on previous page).

| APPLICATION | CHECK (<input checked="" type="checkbox"/>) FUNCTIONS NOW AUTOMATED | LEVEL OF USER SATISFACTION FOR AUTOMATED FUNCTIONS SCALE (1-5) | REASONS FOR AUTOMATING (CODE) | PLAN TO AUTOMATE OR FURTHER AUTOMATE NEXT 2 YEARS CHECK (<input checked="" type="checkbox"/>) | REASONS FOR PLANNED EXPANSION (CODE) |
|--|---|--|-------------------------------|---|--------------------------------------|
| | | | | MANAGEMENT, ACCOUNTING, AND FINANCIAL | |
| Patient Billing | | | | | |
| Accounts Receivable | | | | | |
| Insurance Claims | | | | | |
| Personnel, Payroll | | | | | |
| General Ledger | | | | | |
| Inventory | | | | | |
| Other | | | | | |
| PATIENT MANAGEMENT | | | | | |
| Patient Registration & Scheduling | | | | | |
| Patient records, Storage And Retrieval | | | | | |
| Laboratory Reporting | | | | | |
| Radiology | | | | | |
| Other | | | | | |

SECTION III: Applications (Cont'd)

1. Degree of Automation (Check or use CODE on page 3).

| APPLICATION | CHECK (<input checked="" type="checkbox"/>) FUNCTIONS NOW AUTOMATED | LEVEL OF USER SATISFACTION FOR AUTOMATED FUNCTIONS SCALE (1-5) | REASONS FOR AUTOMATING (CODE) | PLAN TO AUTOMATE OR FURTHER AUTOMATE NEXT 2 YEARS CHECK (<input checked="" type="checkbox"/>) | REASONS FOR PLANNED EXPANSION (CODE) |
|---------------------------------|---|--|-------------------------------|---|--------------------------------------|
| | | | | PROFESSIONAL SERVICES | |
| Professional Education | | | | | |
| Patient Education | | | | | |
| Research | | | | | |
| Personal Financial Records | | | | | |
| Investment & Portfolio Analysis | | | | | |
| Other | | | | | |

SECTION IV: Patient Billing-Claims Processing-Accounts Receivable-Collections.

1. Method of Billing.

When do you collect payment?

Percent of Total Collections

| | |
|---------------------------------------|---------|
| () Bill Mailed | _____ % |
| () Bill Given At Time Of Visit | _____ % |
| () Payment Immediately After Service | _____ % |
| () Prepaid | _____ % |

2. Which third party payors do you bill direct?

- () Blue Cross/Blue Shield () Medicare
 () Commercial Insurance Cos. () Medicaid
 () Other _____
 () None

3. Are you generally satisfied with your present collections process?

From Point of View of: Range 1-5: Remarks:

| | | |
|---------------------|-------|-------|
| Overall | _____ | _____ |
| Effectiveness | _____ | _____ |
| Timeliness | _____ | _____ |
| Bad Debt Prevention | _____ | _____ |
| Expense | _____ | _____ |
| Staff Time | _____ | _____ |

4. Billing. How is your billing prepared and what percent of total billing is represented by each payer? (Ask question for each payer)

| PAYER | DIRECT BY COMPUTER | MANUALLY | PERCENT OF TOTAL BILLING |
|--------------------------|--------------------|----------|--------------------------|
| Medicare | | | |
| Medicaid | | | |
| Blue Cross | | | |
| Commercial Insurance Co. | | | |
| Patient | | | |

INPUT

5. Accounts receivable. What is the average age of your outstanding receivables?

_____ days

6. What are the total amounts of your outstanding receivables, by length of time?

| | Paid By <u>3rd Party</u> | (Thousands) | Paid By <u>Patient</u> |
|-------------------|-----------------------------|-------------|---------------------------|
| In House unbilled | _____ | _____ | _____ |
| Under 30 days | _____ | _____ | _____ |
| 30 - 60 days | _____ | _____ | _____ |
| 60 - 90 days | _____ | _____ | _____ |
| Over 90 days | _____ | _____ | _____ |
| Total outstanding | _____ | _____ | _____ |

7. Collections. When routine methods of bill collection have been exhausted do you:

First try to collect them yourselves () Yes () No

Turn them over to a collection agency () Yes () No

Do both () Yes () No

8. Bad Debt. After what length of time do you consider an unpaid bill a bad debt?

_____ days

What percentage of total receivables are bad debt? _____ %

What percentage of bad debts are third party payers? _____ %

SECTION V: Financial Services

1. Do you accept credit cards?

() Yes () No

2. If yes, which ones?

What percent of bills are paid by credit card? _____ %

What percent of bills are paid by cash? _____ %

3. I would like to briefly explain a new proposed medical credit card system and get your reaction to the overall concept and then to the attractiveness of the individual features. The novel card system would have the following features:

- Include identification and current health insurance coverage as part of the card.
- Includes emergency medical data, i.e., blood type, allergies.
- Extends a personal credit line in addition to insurance.
- Produce all insurance claims on file and collect them for you.
- Produce and collect patient bills, guaranteeing the patient bill to you.

On a scale of 1-5 (5 being high) would you be interested in accepting such a credit card?

Scale _____

With respect to the attractiveness of the individual features, rate them on a scale from 1-5 (5 being high):

- Identification:

Scale _____

- Verify health insurance coverage:

Scale _____

- Provide emergency medical data:

Scale _____

- Produce, file and collect insurance claims:

Scale _____

- Provide guarantee of payment of insurance claims:

Scale _____

- Produce, collect and guarantee patient bills:

Scale _____

REMARKS: (Please elaborate)

What don't you like about the card?

4. With respect to factoring or borrowing against your receivables, are you:

() Presently involved?

If so, with what institution(s)?

What are the charges or interest rates involved?

Is this tied in with your bill processing function?

() Yes () No

() If you are not presently involved, are you interested in becoming involved?

() Yes () No

5. Please express your interest in using the following financial services.

| SERVICE | PRESENTLY INVOLVED | | LEVEL OF SATISFACTION SCALE (1-5) | INTERESTED IN BECOMING INVOLVED (Yes/No) | CONSIDERING A CHANGE (Yes/No) | IF YES, WHY CHANGE? |
|--------------------------------------|--------------------|-----|-----------------------------------|--|-------------------------------|------------------------|
| | NO | YES | | | | |
| Construction Loans | | | | | | |
| Equipment Leasing | | | | | | |
| Investment Counseling and Management | | | | | | |
| Cash Management | | | | | | |
| Mortgages | | | | | | |
| Coop Buying | | | | | | |
| Other: | | | | | | |

6. To sum up, briefly, what are the basic problems and issues of concern to you?

SHORT TERM HOSPITALS
GENERAL MEDICAL AND SURGICAL

SECTION I: Hospital Description: (Data largely available from AHA Guide).

1. Classification:

- | | |
|--|------------------------------------|
| () Independant - Non Profit (voluntary) | () Run under management contract. |
| () Church Operated | () Investor Owned |
| () University Affiliated | () Hospital District or Authority |
| () Part Of A Group Or Chain | () Proprietary |
| () Governmental | |
| () Other _____ | |

2. Admissions _____

13. Do you have any major expansion plans in the next two years?

3. Census _____

() Yes () No

4. Percent Of Occupancy _____

Comments _____

5. Average Length Of Stay _____

6. Emergency Room Visits _____

7. Outpatient Visits _____

8. Total Operating Income _____

14. Do you have a formal planning process?

9. Total Annual Expense _____

() Yes () No

10. Payroll _____

In Data Processing?

11. Personnel _____

() Yes () No

12. Number of Locations _____

SECTION II: Use of Computer Equipment And Services

1. Does your hospital use computers now?

() Yes () No

If No, why not? _____

If No, skip to Section III

2. Do you employ:

() In House EDP

() Remote Computing Services

() Both

3. Please rate your general level of satisfaction with your EDP operation on a scale of 1-5 (5 is high).

() In House _____ () Outside Service _____

(NOTE: If an interview with the director of data processing is included for this hospital, skip questions 4 - 9 and proceed to SECTION III.)

4. Installed equipment (if applicable).

| EQUIPMENT | VENDOR | MODEL |
|-------------------------|--------|-------|
| Large Computer | | |
| Small Business Computer | | |
| Minicomputer(s) | | |

5. What is the source of your software?

() Written Outside Industry () By
In House Software Co. Standard Consultants
Programs () Equipment
Vendor

Names of vendors: _____ Vendor

6. Remote Computing Service (if applicable):

Name(s) of Service Vendor:

Mode of Operation

| TYPE | BATCH | INTERACTIVE (ON-LINE) |
|--------------------------|-------|-----------------------|
| Installed Equipment | | |
| Remote Computer Services | | |

8. Expenditures. How much do you spend annually on EDP?
- () In House \$ _____ per mo. () per yr. ()
 () Outside Services \$ _____ per mo. () per yr. ()
9. Staff. How large is your EDP staff? (If applicable)
 No. of personnel _____

SECTION III: Applications.

(NOTE: Do not read this list to person being interviewed,
 use list to generally code response).

REASONS FOR AUTOMATING AND FOR PLANNED EXPANSION - CODE FOR III-1.

A. COST:

1. The cost of performing function itself is too high.
2. There are lost opportunities for increasing revenue/decreasing overall costs.

B. Time:

1. The elapsed time to perform the function is too great.
2. Too much staff time is being spent in performing the function.

C. Performance Quality:

1. There are too many errors.
2. Users are dissatisfied with the range and depth of features.
3. The function itself is not fully integrated.
4. This function should be integrated with other functions.

D. Control and Information:

1. There is a lack of sufficient management control and/or information.
2. There is a lack of sufficient operational control and/or information.

E. Other:

Describe:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

SECTION III: Applications (If not automated, ask future plans)

1. Degree of Automation (Check ✓) or use CODE on previous page.

| APPLICATION | CHECK (✓) FUNCTIONS NOW AUTOMATED | LEVEL OF USER SATISFACTION FOR AUTOMATED FUNCTIONS SCALE (1-5) | REASONS FOR AUTOMATING (CODE) | PLAN TO AUTOMATE OR FURTHER AUTOMATE NEXT 2 YEARS CHECK (✓) | REASONS FOR PLANNED EXPANSION (CODE) |
|---|---|--|-------------------------------------|--|---|
| | | | | MANAGEMENT, ACCOUNTING, AND FINANCIAL | |
| Patient Billing | | | | | |
| Accounts Receivable | | | | | |
| Insurance Claims | | | | | |
| Personnel, Payroll | | | | | |
| General Ledger | | | | | |
| Inventory | | | | | |
| Other | | | | | |
| PATIENT MANAGEMENT | | | | | |
| Admission, Trans- fer & Discharge | | | | | |
| Medical Records Storage And Retrieval | | | | | |
| Laboratory Reporting | | | | | |
| Pharmacy | | | | | |
| Radiology | | | | | |

SECTION III: Applications (cont'd)

1. Degree of Automation (Check or use CODE on Page 3).

| APPLICATION | CHECK (<input checked="" type="checkbox"/>) FUNCTIONS NOW AUTOMATED | LEVEL OF USER SATISFACTION FOR AUTOMATED FUNCTIONS SCALE (1-5) | REASONS FOR AUTOMATING (CODE) | PLAN TO AUTOMATE OR FURTHER AUTOMATE NEXT 2 YEARS CHECK (<input checked="" type="checkbox"/>) | REASONS FOR PLANNED EXPANSION (CODE) |
|-----------------------------------|---|--|-------------------------------|---|--------------------------------------|
| | | | | PATIENT MANAGEMENT (CONT'D) | |
| Order Entry | | | | | |
| Other | | | | | |
| PROFESSIONAL SERVICES | | | | | |
| Professional Education | | | | | |
| Patient Education | | | | | |
| Research | | | | | |
| Personal Financial Record Keeping | | | | | |
| Investment Portfolio Analysis | | | | | |
| Other | | | | | |

3. If you are dissatisfied with any of your presently automated functions, what are the reasons for dissatisfaction?

() Cost
 () Time
 () Performance Quality
 () Control & Information
 () Other _____

SECTION IV: Patient Billing-Claims Processing-Accounts Receivable-Collections

1. Patient Insurance Coverage Verifications. How does your hospital verify insurance coverage for a patient to be admitted?
 (Check one for each line).

I=In Patient O=Out Patient ER=Emergency Room

| THIRD PARTY PAYER | CARD ACCEPTED AS EVIDENCE | | | DIRECT BY COMPUTER | | | MANUALLY | | | OTHER | | |
|--------------------------|---------------------------|---|----|--------------------|---|----|----------|---|----|-------|---|----|
| | I | O | ER | I | O | ER | I | O | ER | I | O | ER |
| Medicare | | | | | | | | | | | | |
| Medicaid | | | | | | | | | | | | |
| Blue Cross | | | | | | | | | | | | |
| Commercial Insurance Co. | | | | | | | | | | | | |
| Other | | | | | | | | | | | | |

2. When do you verify?

In Patient _____

Out Patient _____

Emergency Room _____

3. Are you generally satisfied with your present verification process? (Scale 1-5)

| <u>From Point Of View Of:</u> | <u>Scale</u> | <u>Remarks:</u> |
|-------------------------------|--------------|-----------------|
| Effectiveness | _____ | _____ |
| Timeliness | _____ | _____ |
| Expense | _____ | _____ |
| Staff Time | _____ | _____ |
| Patient Satisfaction | _____ | _____ |
| Bad Debt Prevention | _____ | _____ |

4. Billing. How is your third party billing prepared and what percentage of total billing is represented by each payer? (ask question for each payer). I=In Patient O=Out Patient ER=Emergency Room

| <u>PAYER</u> | <u>DIRECT BY COMPUTER</u> | | | <u>MANUALLY</u> | | | <u>PERCENT OF TOTAL BILLING</u> | | |
|--------------------------|---------------------------|----------|-----------|-----------------|----------|-----------|---------------------------------|----------|-----------|
| | <u>I</u> | <u>O</u> | <u>ER</u> | <u>I</u> | <u>O</u> | <u>ER</u> | <u>I</u> | <u>O</u> | <u>ER</u> |
| Medicare | | | | | | | | | |
| Medicaid | | | | | | | | | |
| Blue Cross | | | | | | | | | |
| Commercial Insurance Co. | | | | | | | | | |
| Patient Funds | | | | | | | | | |

5. Accounts receivable. What is the average age of your outstanding receivables? _____ days.

6. What are the total amounts of your outstanding receivables, by length of time?

(In Thousands)

| | <u>Paid By Third Party</u> | <u>Paid By Patient</u> |
|-------------------|--------------------------------|----------------------------|
| In House unbilled | _____ | _____ |
| Under 30 days | _____ | _____ |
| 30 - 60 days | _____ | _____ |
| 60 - 90 days | _____ | _____ |
| Over 90 days | _____ | _____ |
| Total | _____ | _____ |

7. Collections. When routine methods of bill collection have been exhausted do you:

8. After how long a period of time do you consider an unpaid bill a bad debt? days.

9. What percentage of receivables are bad debt? %

What percentage of bad debts are third party payers? %

SECTION V: Financial Services

1. Do you accept credit cards?

In patient services () Yes () No

Outpatient services () Yes () No

Emergency services () Yes () No

2. If yes, which ones?

In patient: _____

Outpatient: _____

Emergency Room: _____

3. What percentage of total bills are paid by credit cards?

% What percentage of total bills are paid by cash? %

4. I would like to briefly explain a new proposed medical credit card system and get your reaction to the overall concept and then to the attractiveness of the individual features. The novel card system would have the following features:

- Include identification and current health insurance coverage as part of the card.
 - Emergency medical data, i.e., bloodtype, allergies.
 - Provide a personal credit line in addition to insurance.
 - Produce all insurance claims and file and collect them for you.
 - Provide guarantee of payment of claims.
 - Produce and collect patient bills, guaranteeing the patient bill to you.

On a scale of 1-5 (5 being high) would you be interested in accepting such a credit card?

Scale _____

With respect to the attractiveness of the individual features, rate them on a scale from 1-5 (5 being high):

- Identification:

Scale _____

- Verify health insurance coverage:

Scale _____

- Provide emergency medical data:

Scale _____

- Produce, file and collect insurance claims:

Scale _____

- Provide guarantee of payment of claims:

Scale _____

- Produce, collect and guarantee patient bills:

Scale _____

REMARKS: (Please elaborate)

What don't you like about the card?

5. Advances

Do you receive advances on uncollectable receivables from third party payers?

() Yes () No

What percentage of receivables are covered by advances?

_____ %

6. Factoring/Borrowing

With respect to factoring or borrowing against your receivables, are you:

() Presently involved?

If so, with what institution(s)?

() Interested in becoming involved.

() Not interested.

If involved, what rate of interest or charges do you pay?

Interest _____ % Charges _____

7. Please express your interest in using the following financial services.

| SERVICE | PRESENTLY INVOLVED | | LEVEL OF SATISFACTION SCALE (1-5) | INTERESTED IN BECOMING INVOLVED (Yes/No) | CONSIDERING A CHANGE (Yes/No) | IF YES, WHY CHANGE? |
|---|--------------------|-----|---|---|-------------------------------------|------------------------|
| | NO | YES | | | | |
| Construction Loans | | | | | | |
| Equipment Leasing | | | | | | |
| Investment Counseling and Management | | | | | | |
| Cash Management | | | | | | |
| Mortgages | | | | | | |
| Coop Buying | | | | | | |
| Mortgage Placement Bonds | | | | | | |
| Other: | | | | | | |

8. To sum up, briefly, what are the basic problems and issues of concern to you?

APPENDIX D: RELATED INPUT REPORTS

- Medical Office And Clinics, May 1979.
- Computer Services Markets In Hospitals, October 1978.

APPENDIX E: DEFINITIONS

- AAGR

The average annual growth rate. The AAGR is a compounded growth rate over a time period in years, expressed as an average in terms of percent (%).

- COMPUTER SERVICES

These are services provided by vendors which perform data processing functions using vendor computers, or assist users to perform such functions on their own computers.

- REMOTE COMPUTING SERVICES (RCS)

Provision of data processing to a user by means of terminals at the user's site(s) connected by a data communications network to the vendor's central computer. The three sub-modes of RCS are:

- I. INTERACTIVE (timesharing) is characterized by interaction of the user with the system, primarily for problem solving timesharing, but also for data entry and transaction processing; the user is "on-line" to the program/files.

2. REMOTE BATCH is where the user hands over control of a job to the vendor's computer which schedules job execution according to priorities and resource requirements.
 3. DATA BASE is characterized by the retrieval of information from a vendor-maintained data base. This may be owned by the vendor or a third party.
- **BATCH SERVICES**

This includes data processing performed at vendors' sites of user programs and data which are physically transported (as opposed to electronically by telecommunications media) to and from those sites. Data entry and data output services, such as keypunching and COM processing, are also included. Batch services include those expenditures by users which take their data to a vendor site which has a terminal connected to a remote computer used for the actual processing.
 - **FACILITIES MANAGEMENT (FM)**

(Also referred to as "Resource Management" or "Systems Management.") The management of all or part of a user's data processing functions under a long-term contract (not less than one year). To qualify as FM, the contractor must directly plan and control as well as operate the facility provided to the user on-site, through communications lines, or mixed mode. Simply providing resources, even though under a long-term contract and/or for all of a users' processing needs, does not necessarily qualify as FM.
 - **PROFESSIONAL SERVICES**

Management consulting related to EDP, systems consulting, systems design and programming, and other professional services are included in this category. Services can be provided on a basis of: "Time and Materials," whereby the user pays for the time used of an individual on a daily or other

fixed rate, or "Fixed Price," where the user pays a fixed fee for a specific task or series of tasks.

- **SOFTWARE PRODUCTS**

This category is for users' purchases of systems and applications packages for use on in-house computer systems. The figures quoted include lease and purchase expenditures, as well as fees for work performed by the vendor to implement and maintain the package at the users' sites. Fees for work performed by organizations other than the package vendor are counted in professional services.

